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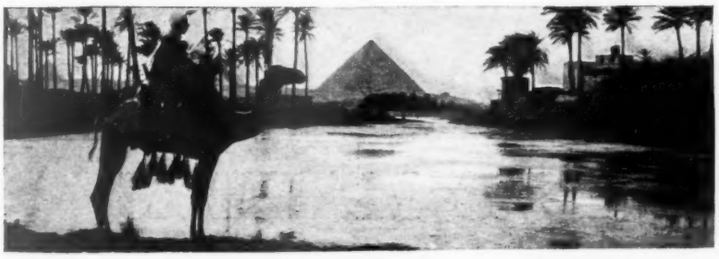

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Now Laying Foundation for Prosperity

Highest daily average estimated total production in 1927, week ended July 30, 2,587,105 bbls. Lowest in 1927, Jan. 22, 2,360,789 bbls.

Movements to Balance Supply and Demand Together With Assurance of Big Consumption Are Vital Factors

By Andrew M. Rowley

Highest daily average estimated light oil production in 1927, week ended July 30, 2,102,385 bbls. Lowest in 1927, Jan. 1, 1,790,729 bbls.

That the petroleum industry now is laying the foundation for prosperous times this summer and the remainder of the year is an opinion becoming more widespread as conditions in all branches of the industry are studied closely. Great stress is placed upon the success of movements of operators to maintain a better balance between supply and demand and the expectation that these efforts, if continued well into the future, will prevent any orgy of drilling upon the opening of prospective new pools and avoid such wasteful production and methods as have obtained so often during the past.

Closer supervision over wildcat drilling and the opening of new areas, following the completion of discovery wells, will be placing in actual practice the experience gained at Seminole. This policy of orderly development, considered in connection with the practical certainty the industry will enjoy at least a normal increase in consumption, with prospects of greater than a normal increase, insures a substantial draft on present high stocks of crude oil and the reduction to a minimum of the menace of the market again being flooded almost overnight with the production of a newly discovered flush pool.

Based on a normal gain in consumption of gasoline this year and a recovery of 40 per cent gasoline from a barrel of crude, the refiners of this country will have to run to stills an average of 2,600,000 bbls. of crude every day this year in order to manufacture the gasoline which will be consumed. Production of crude is below that level and production and imports at this time do not total that quantity. As refiners have not been running that much crude to stills so far this year, they will have to do better than that average the remainder of the year, if all the gasoline consumed this year is manufactured this year.

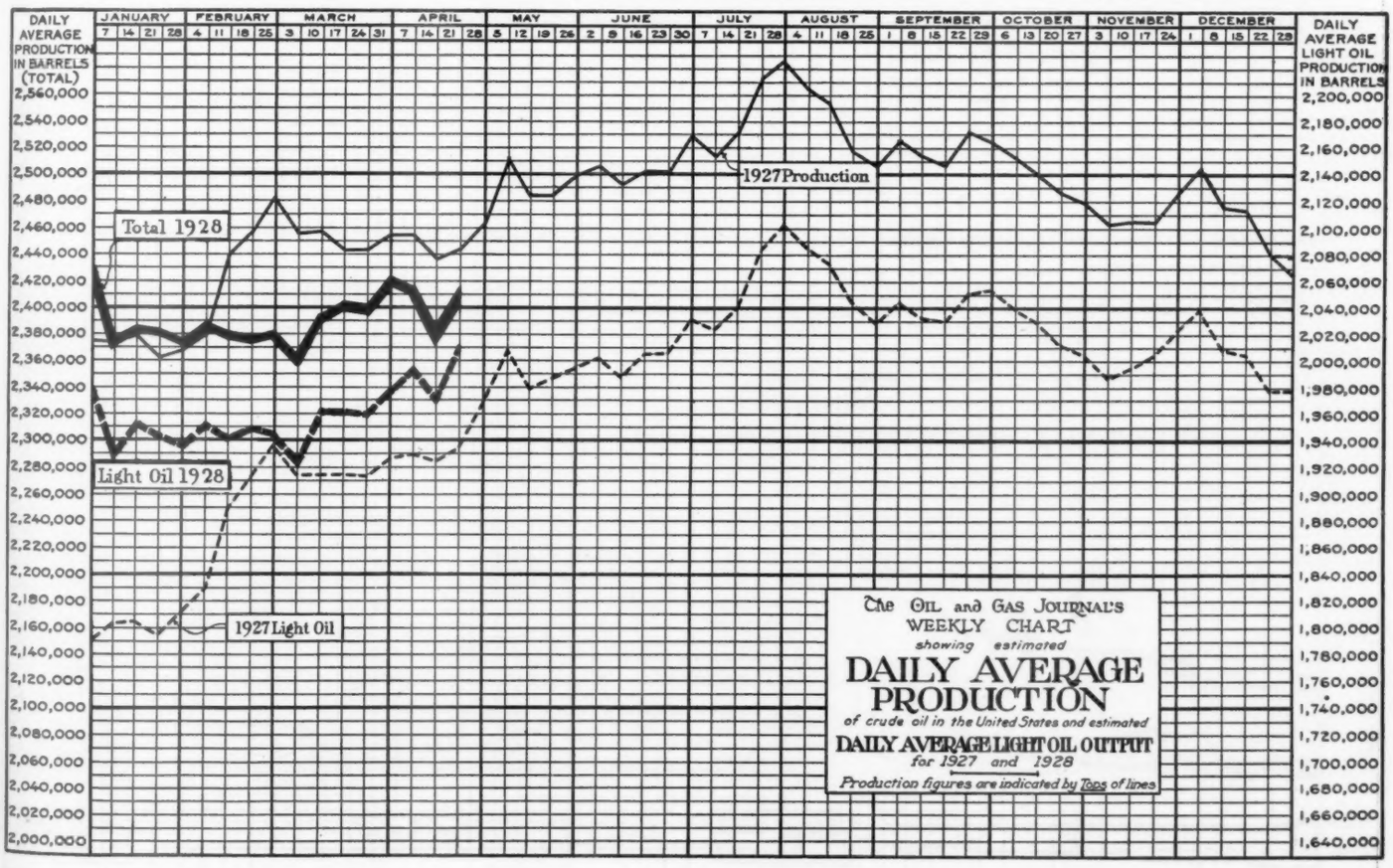
These are factors which point to better times. Much depends upon a continuance of present movements of operators to assure orderly development of new areas but a big consumption of crude and gasoline is certain.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended April 21, and a comparison with the previous week follows:

	April 21		April 14	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	14,490	.....	14,415	.....
Burbank	37,735	.....	38,565	.....
Other Osage Fields	29,985	.....	30,045	.....
Cushing and Shamrock	20,895	.....	20,885	.....
Bristow	24,280	.....	24,330	.....
Seminole	280,410	.....	283,185	.....
Northern Miscellaneous	153,745	.....	154,560	.....
Southern Fields	58,690	.....	58,980	.....
Total Oklahoma	620,230	.....	624,965	.....
West Texas—				
Hendricks	217,351	.....	183,332	.....
Yates	50,521	.....	48,106	.....
Remainder	105,369	.....	109,776	.....
Total West Texas	373,241	.....	341,214	.....
North Louisiana	40,385	7,350	41,480	7,400
Arkansas	21,430	63,780	21,120	64,160
North Central Texas	132,514	.....	130,569	.....
Texas Panhandle	69,240	.....	71,845	.....
East Central Texas	23,318	.....	23,341	.....
Kansas	111,115	.....	112,210	.....
Total Mid-Continent Area	1,391,473	71,130	1,366,744	71,560
Gulf Coast	.....	119,920	.....	121,724
Southwest Texas	.....	26,589	.....	27,105
Eastern	105,500	.....	104,000	.....
Rocky Mountain Area	79,560	.....	75,938	.....
California—				
Santa Fe Springs	37,250	.....	37,250	.....
Long Beach	160,000	.....	150,000	.....
Torrance	2,000	16,500	2,000	16,500
Huntington Beach	55,500	.....	56,000	.....
Dominguez	12,250	.....	12,250	.....
Inglewood	18,000	11,500	18,000	11,500
Ventura Avenue	51,000	.....	52,000	.....
Seal Beach	39,250	.....	39,500	.....
Remainder of State	60,000	154,500	60,000	159,750
Total California	435,250	182,500	427,000	187,750
Total United States	2,011,783	400,139	1,973,682	408,139
Grand Total	2,411,922		2,381,821	

Total Increase, 30,101 Bbls.; Light Oil Increase, 38,101 Bbls.



Natural Gasolines Advance Rapidly

Prices on All Grades Higher. Export Orders Aid Refinery Gasolines. Fuel Oil and Gas Oil Quotations Recede

By W. T. Ziegenhain

The continued rapid advance of natural gasoline prices featured the Oklahoma refined oil market for the week, with prices on refinery gasoline firm. The demand for gasoline has been more than normal and the domestic movement has been augmented by several large orders for export shipment, the material to move over the next three weeks. Kerosene prices remain unchanged.

Some export inquiries have been received, which, together with the fair movement to the agricultural states, tend to force prices higher. Some refiners say, however, their increased production is not being taken out as rapidly as it was a week ago.

Fuel oil and gas oil witnessed a slight recession of prices. Refiners are not so well protected with contracts taking their production over next month and there is a tendency to anticipate more keen competition in the very near future on the part of West Texas fuel. Some competition is already felt in the Chicago district and unless enough demand develops from the steel manufacturers and other industries that can not use a high sulphur fuel, over the balance of the month slightly lower prices may be quoted.

Lubricants have moved more rapidly and more consistently so that most of the practice of giving price concessions for large orders has been discontinued. Cylinder stocks continue to move slowly and prices quoted on large export orders are considerably below those asked on one car domestic movement. Wax prices also remain unchanged and while refiners point to a relatively small volume of stocks on hand and are receiving numerous inquiries for wax they are finding a stronger buying resistance as prices are advanced above 3 cents. Bright stocks have been placed in a little better position as more of it is being used by the manufacturers in their own compounding plants. Prices have remained unchanged, but most refiners believe the trend will be slowly upward over next month.

Over the last two weeks refiners have been approached with inquiries for large volumes of gasoline for export movement. In all about 10,000,000 gallons are involved. About 7,500,000 gallons of this has been taken up by Oklahoma and North Texas refiners and the other 2,500,000 gallons are still to be placed. The latter is for 64-66 375 endpoint aviation gasoline. The question of whether to supply these large orders at prices slightly below the spot market at a time when

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REFINED MARKET BAROMETER

Higher gasoline prices have been well supported in all refining centers during the past week, and the outlook for a continuation of the trend upward seems likely. Natural gasolines have been materially advanced in the Mid-Continent, and strength is shown in California. The eastern seaboard refiners are relatively free of competition on the part of California and Gulf Coast gasoline, as these shipments have been held back through the anticipation of higher prices and the good local demand at these centers. Kerosene has not been generally advanced in price, but inquiries for export material have been received and has supported the higher prices previously set. Fuel oil showed stability in all centers outside the Mid-Continent area. The effect of the increased production of fuel oil in the West Texas is beginning to be felt. Lubricants have enjoyed a more rapid and a more consistent movement, but prices are generally unchanged. Wax purchases for export have supported the higher price on the Atlantic seaboard, but increasing resistance is being felt by refiners on the part of buyers.

Mid-Continent—The desire on the part of refiners to get in a supply of natural gasoline to take care of their needs over the next few weeks before the price was advanced too much forced the market up daily, and at the close of the week the price on Grade AA was more than a cent above the price at the close of the previous week. Large exports of refinery gasoline placed that market in a favorable position to resist any pressure on the part of buyers over the next few weeks, and a continuation of the trend toward higher prices is expected. Fuel is weaker and was followed by a slight recession in gas oil prices as a result of the increased competition of West Texas production.

Atlantic Seaboard—The higher gasoline prices were well supported, and a 10-cent gasoline market by the end of May is anticipated. The other products are also showing renewed strength, including fuel oil despite the refining of large volumes of heavy Venezuelan and West Texas crudes.

Chicago—The demand for refined products fell off slightly, but there was no thought of lower prices. Fuels did not experience their characteristic firmness, and small price concessions were being offered.

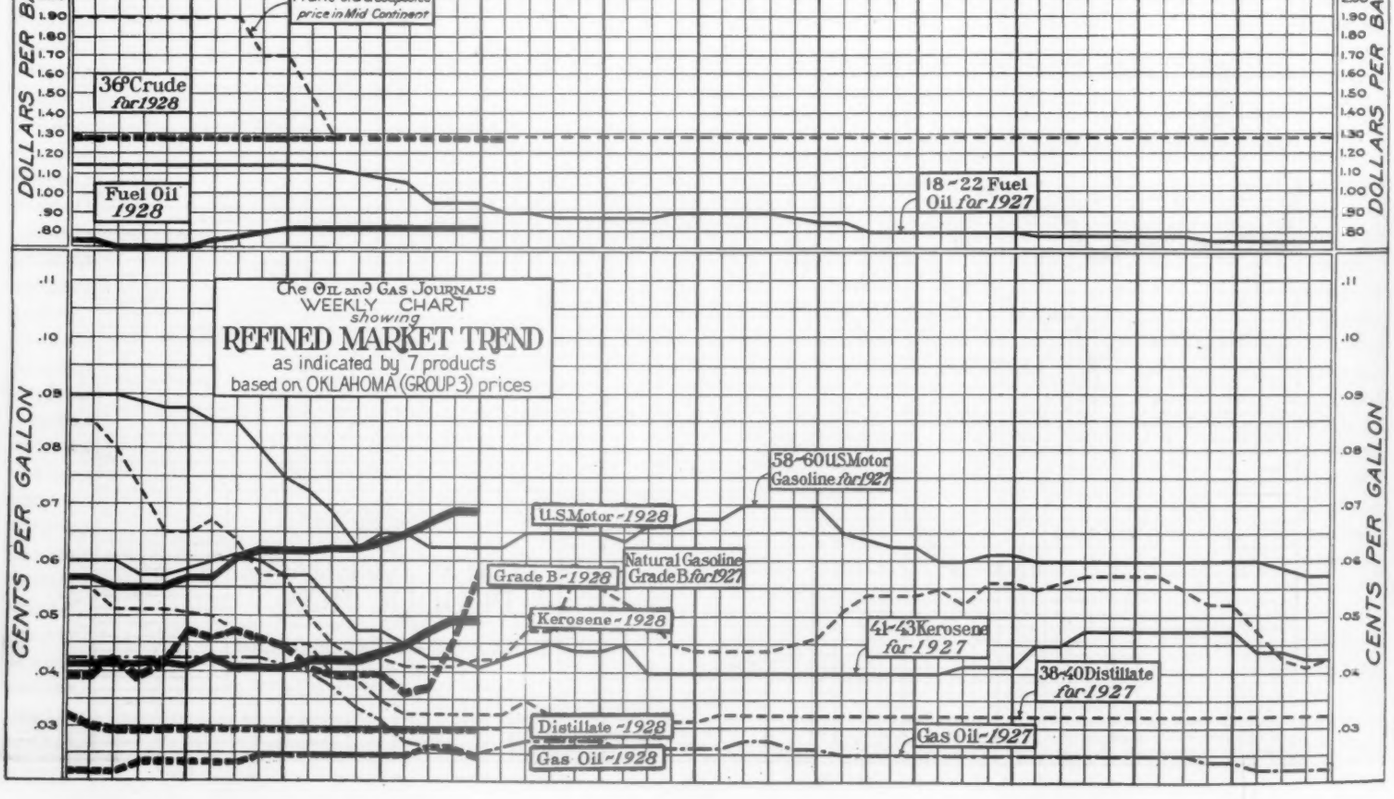
Gulf Coast—Lubricating oil prices remain unchanged, although there is a rapid movement of this product for export. Fuel oil weakened slightly.

Pennsylvania—There were relatively few price changes, but the higher prices are being well supported. Bright stock has shown renewed strength as the demand for compounded motor oils increased.

California—Refiners were unwilling to accept export business for gasoline at the present market as a result of the favorable domestic demand, and higher prices are anticipated. Other oils were also strong, kerosene and fuel oil appearing in a much more favorable position to advance.

NEW YORK PRICE ADVANCED

NEW YORK, Apr. 24.—Standard of New Jersey announces a one-quarter cent advance in gasoline effective April 25, making the new price 9¾ cents at New York, Baltimore and Norfolk, and 9½ cents at Charleston. The Acewood Petroleum Corp., today advanced California gasoline one-quarter cent to 10 cents at New York.



Hendricks to be Held to 160,000 Bbls.

Production Figure Set by Texas Commission's Order Expected to Overcome Difficulty About Existing Contracts

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 24.—The Texas Railroad Commission's order curbing the Hendricks Field in Winkler County issued at Austin today and effective May 5 did not recognize the existing contracts in the field and will pull the field's production down to 160,000 bbls. for six months, with a plan based on a predetermined percentage of the well's potential production.

The crude contracts in Hendricks proved an unsurmountable barrier to the efforts of operators to agree on a proration plan. Magnolia Petroleum Co. and Cranfill & Reynolds' 3,000,000-bbl. contract was the one point operators failed to iron out satisfactorily to all concerned. Representatives of both companies contended an order ignoring or abrogating existing contracts would invalidate the entire curtailment order. Counsel for other interests contended the rule would stand a court test.

It is believed by many who scanned the order hurriedly that the 160,000-bbl. allowed production under the potential well production plan will come close to permitting contracts to be filled normally. In this event there is little likelihood of the order being contested.

The advisory committee of operators will meet in Fort Worth April 25 and will make an effort at that time to select an umpire for the field.

Under the order no wells in Hendricks will be allowed to produce on air or gas lift or shot, without the consent of the Railroad Commission.

The commission also made provision for the drilling of wells which is believed to prevent any town lot drilling in the event the field was not defined before reaching the town lots. This provision is made in a separate order.

Substance of Order

Following is the substance of each of the rules issued. The preamble to the order related in detail reasons for operation, wastage being the primary cause of the order:

Rule 1. Until further order of the commission not more than 160,000 bbls. of oil per day shall be produced from said field.

Rule 2. Each purchaser of crude oil shall nominate to the Railroad Commission the daily quantity of oil such purchaser will purchase for current transportation from the field during the first 15 days of such month and the remainder of such month the sum of the quantity to be purchased daily for current transportation from the field shall constitute the daily market outlet for such period.

Rule 3. Every section in the field shall be divided into 16 tracts of 40-acre units. The daily amount of oil to be taken and marketed or stored from each 40-acre unit shall be a quantity daily equal to the quotient obtained by dividing half of the daily market outlet for the period involved by the number of 40-acre units in the field producing at the commencement of such period without reference to the number of wells located on such unit, and in addition thereto they shall be entitled to have removed and marketed or stored daily its prorata of one-half of the daily market outlet based on the ratio of the daily potential production of the field. No oil in excess of such amount shall be produced from any 40-acre unit. Segregated portions of a 40-acre unit shall share equably in the amount to which such 40-acre unit is entitled.

Rule 4. The term daily potential production under these rules shall mean the number of barrels of oil which the wells thereon are capable of producing in a day of 24 hours. The daily potential production shall be determined on or immediately prior to the 1st and 15th day of each calendar month and such determination shall control proration of the first 15 days of the month and the remainder of the month after the first 15 days, respectively.

Rule 5. Any operator or owner or the person or corporation to whom such oil has been by him sold may store during every half day period the portion of the daily market outlet to which the several producing units owned by him are entitled except as provided in the rule. No oil shall be stored in said field.

Drilling Regulations

Rule 6. No wells in said field shall be put on oil or gas lift nor shall any of said wells be operated in such manner as to unnecessarily or unreasonably waste gas or wastefully dissipate the natural pressure thereof.

Rule 7. No well in said field shall be shot without the approval of the Railroad Commission. Effective for six months on and from May 5, 1928.

Separate Order: It is ordered by the commission not more than one well producing oil and gas or oil or gas shall be drilled to each 10 acres and no well shall be drilled nearer than 330 feet to any property line and nearer than 660 feet to any other producing well. Provided that the Railroad Commission, in order to prevent waste or to protect vested rights may grant the exception permitting drilling within shorter distances than is above described upon application filed fully stating notice having first been given to all the adjacent lessors affected thereby.

Meeting of Operators

A meeting of the operators and the railroad commission was held in Fort Worth Saturday with C. V. Terrill presiding. An advisory and administrative committee of seven operators was appointed by the operators to aid the commission in carrying out the program and to select an umpire to be in charge of the plan and be an agent of the commission.

Mr. Terrill, in announcing the order, said it would be as fair and equitable as the commission could make it. "It may not be satisfactory to all but under the circumstances we believe it fair." The

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OKLAHOMA-KANSAS OPERATORS ADOPT CONSERVATION RESOLUTION

A meeting representing all branches of the producing end of the oil business in the Oklahoma and Kansas fields, which was held in Tulsa, April 21, resulted in the adoption of a plan for the elimination of all unnecessary wells, whether wildcat or in proven fields, and also a plan calling for curtailment of any production which may result from the wildcat wells now under way. The meeting unanimously adopted both of these recommendations which were incorporated in a plan advanced by Rush Greenslade, vice president of the Gypsy Oil Co. and amended by James A. Veasey, chief counsel of the Carter Oil Co.

The meeting was called by the advisory conservation committee of the Oklahoma-Kansas division of the Mid-Continent Oil and Gas Association, which was formed several weeks ago, and which was empowered to sumbit some plan for the elimination of the wildcat problem. The meeting was opened by E. B. Reeser, chairman of the committee, who read the plan which the committee recommended, and then announced the resignation of the entire committee, stating that it had been created for a specific purpose, and that that purpose was accomplished with the presentation of the plan. By unanimous request, Mr. Reeser continued as chairman of the meeting.

Lengthy Discussion

A lively and lengthy discussion of the various angles connected with the working of such a huge undertaking as the elimination of new wildcat wells followed, and the Greenslade plan which differed slightly from the recommendations of the committee was introduced, and seconded by Mr. Maxey, chief counsel for W. R. Ramsey, Oklahoma City, oil producer.

There was an interesting debate regarding the advisability of delegating such drastic powers to a committee such as the original plan stipulated, and it was apparent that the sentiment of the meeting was closely in sympathy with the general outline of the Greenslade plan which provided only for a pledge to eliminate all unnecessary wells, and pro-

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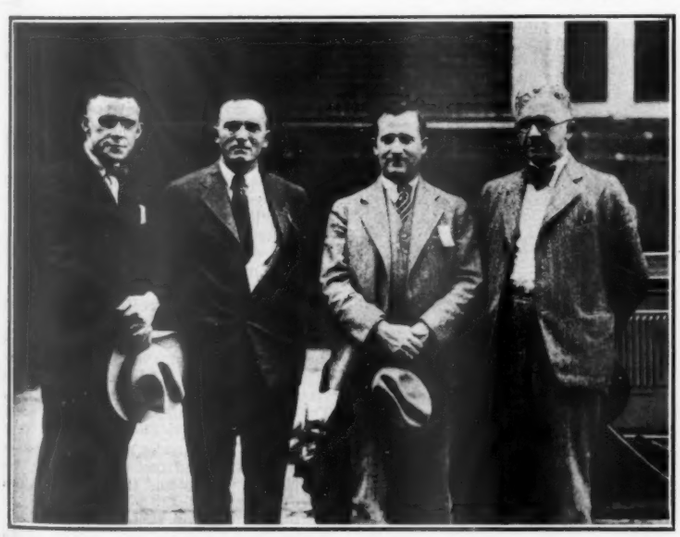
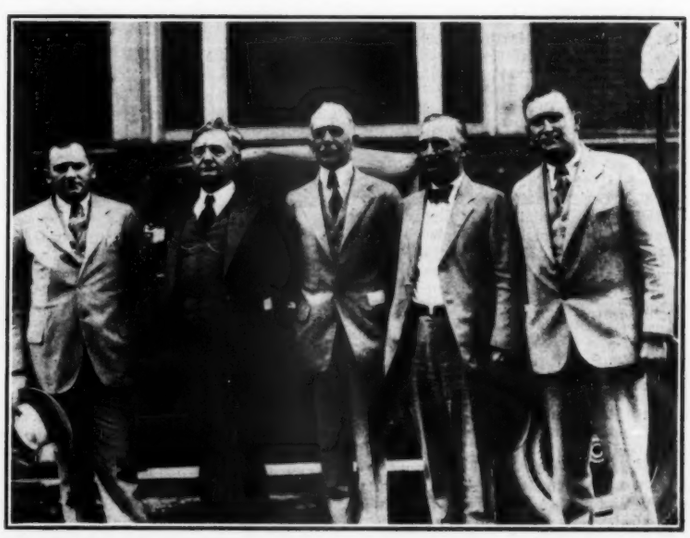
ADVISORY COMMITTEE OF WEST TEXAS OPERATORS



Reading Left to Right: E. G. Allen, Roxana Petroleum Corp.; J. H. Reynolds, Cranfill & Reynolds; John R. Suman, Humble Oil & Refining Co., and secretary of the committee; R. D. Parker, chief supervisor Oil and Gas Division, Texas Railroad Commission.



Left to Right: E. W. Woodruff, Southern Crude Oil Purchasing Co.; C. V. Terrill, member Texas Railroad Commission; J. D. Collett, independent operator, chairman of the committee; B. S. SoRelle, Pure Oil Co., and E. A. Landreth, Landreth Production Co.

Refiners Hold Semiannual Meeting

Membership of National Petroleum Association Discuss Manufacturing and Marketing Problems at Cambridge Springs Convention

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

CAMBRIDGE SPRINGS, Pa., Apr. 20.—A great variety of subjects affecting the oil industry were discussed in the two-day semiannual session of the National Petroleum Association which was brought to a conclusion today.

The production and refining of petroleum, cost accounting, safety work, welfare and insurance, uniformity in testing, economy in efficient combustion, activities of the association's department of standards, pipe stills and fractionating columns, effects of fractionation on the chemical treatment of gasoline, determination of manufacturing expense, the work of research carried on by the Pennsylvania State College, volatility and distillation of motor oils, fundamental research in petroleum and various present-day problems received attention.

A resolution offered by O. P Keeney recommended to the board of trustees of the National Petroleum Association the endorsement of the publicity work of the American Petroleum Institute charging the department of membership and relations with responsibility of securing the active participation of member companies in this public relations work

The keynote speech of the convention was made by the president, E. M. Lyons, who pointed to 1927 as a year creditable to the industry in respect to the consumption of gasoline but discreditable from the standpoint of profits.

"Overproduction was our basic trouble," declared Mr. Lyons. "Today there is a better feeling in the industry. Demand is increasing and marketing prices of most of our manufactured products has advanced since the first of the year."

Mr. Lyons pointed to the electric power industry as one which has found thousands of new uses for petroleum. Ninety laboratories are engaged in all or part time research work with petroleum and its products.

President Lyons declared that a wonderful spirit of co-operation had been built up in the different departments of the association.

The gathering, called to order by Mr. Lyons in the ballroom of the Riverside Hotel, was one of the largest ever assembled in a semiannual meeting of the association and the attendance at all times broke previous records.

Honor Former President

One of the notable features of the gathering was the presentation of an elaborate silver service to Former President O. P. Keeney which took place on the occasion of a dinner attended by the members. Resolutions of appreciation for services rendered the association were adopted for Fayette B. Dow, chief counsel, and C. D Chamberlain, advisory counsel. The splendid work performed by Mr Dow was lauded in a highly complimentary way which was made possible by the fact that the subject of their comment had been obliged to return to his home before the conclusion of the meeting.

Standard Tests

One of the first papers presented was by Dr. Charles V. Bacon favoring greater uniformity in testing. He made a plea for more confidence in the tests of the technical staff and pointed out the dangers of inaccurate instruments and methods in refining.

"In handling samples there seems to be a tendency to believe that so long as the material comes from the same tank it is the same and that is not necessarily so," he said. "The grade may readily range from 580 or 590 to 600. Some variation will be found but it should never be as much as 20 degrees. There is a tendency to hold down technical staffs and to use obsolete instruments. Better equipment is often required to get proper tests in the manufacturing plant. Thermometers are not equally good and cheap ones are apt to be faulty.

"My recommendation would be to have a number of standard thermometers covering different requirements. The thermometer can be checked by the ice plan. Insert it in an ice bath and it should go close to 32 degrees if it is correct.

"There is difficulty in deciding about colors. The greatest difficulty seems to be in distinguishing between Warren E and Oil City E and sometimes while we know what the difference is it is hard to determine that difference from the salesman's standpoint. There does not seem to be much difficulty in determining gravity."

Mr. Scott read a brief paper prepared by E. M. Keeley on cloud-fluidity-pour tests and E E. Bown of the Emery Manufacturing Co. submitted an extended discussion on "Volatility and Distillation of Motor Oils."

Volatility Test

"The subject of volatility applied to motor oils," he said, "has only recently been brought to the attention of a majority of the refiners. The Cadillac Motor Car Co. has introduced volatility tests for motor fuels but not a great deal of information has been published."

Mr. Bown then summarized the work that has been done on these tests.

"The volatility test," he said, "is the rate of evaporation of the motor oil in use in the automobile crankcase and it is desired to learn why some oils are consumed a great deal more rapidly than others."

"Fundamental Research in Petroleum" was reviewed by Dr. R. P. Anderson of the American Petroleum Institute. He explained that which has taken place in the realm of pure and applied science and referred to many applications that have been made in applying pure science discoveries.

"In the not far distant future," he said, "it will be as popular to investigate the chemistry of petroleum as it has been for many years to study the chemistry of coal tar."

Department of Standards

A. W. Scott, as trustee in charge, submitted a paper on the activities of the department of standards and tests of the National Petroleum Association

"Since the annual meeting in 1927," he said, "the department of standards and tests has followed the same general lines as during the previous year although increasing their activities."

The Mid-Western group has been organized and the Ohio-West Virginia group has been subdivided and each of these groups will hold several group meetings this year to discuss these problems. There are 65 refinery laboratories in these group organizations. There has been so much dissatisfaction with the present method of taking cold tests on cylinder stocks, he said, that the department had undertaken to experiment along that line

Welfare and Insurance

The subject of "Welfare and Insurance" was introduced by R. A. Wotowitch, who presided over those discussions. Their principal work, he said, has been fire prevention and he had found that unless the executives of every company co-operate with the fire marshals in their refineries they can never get complete co-operation of every other one there, and there is little need of such a department, he said, without that co-operation. He wished to have the executives inquire whether preventive measures had been taken in his refinery and to show interest in the work.

James H. Herbert, president of the fire and safety marshals of the National Petroleum Association, undertook to explain "what we can do" to prevent fires. Fire marshal groups, he said, had been formed in five different districts.

"These drills should be conducted by surprising the refineries," he said, "and they should be given about three hours' notice of the drill. They should not be notified so long ahead of the inspection that they would have time to look the plant over."

The Warren, Bradford, West Virginia and Oil City groups were heard from in respect to what they have done. James F. Sweeney, of the Viking Oil Corp., pointed out that problems in the Warren group in individual refineries are treated confidentially and there is no spirit of gossip to spread about the conditions found in a neighboring refinery. After the meeting is over there is no discussion respecting such conditions. During May, he said, there will be a great demonstration of foam application. They had found enthusiastic support from those engaged in the work. Two hundred and fifty men are now trained in the Warren district "and they believe they are good." However, they wish to meet men in other groups in contests as was done in western states last year.

Conditions in the Bradford group were described by A Mulhaupt, Jr., of the Kendall Refining Co., and W. D. Mans, of the Tri-State Refining Co., told of the West Virginia district. There, he said, they could not hold weekly meetings as the refineries were far apart and they met monthly.

First Aid Demonstration

The Oil City group was represented by Wayne K. Glenn, of the Pennsylvania Refining Co.

Frank G. Bennett, of the Sinclair Refining Co., discussed fire prevention.

First aid training was demonstrated by the group leaders showing just how an injured man is handled under different conditions, J. J. Forbes, supervising engineer, being in charge of the exhibition with the assistance of Harry Burdelsky and J. S. Ferraro of the Bureau of Mines.

Manufacturing

P. S. Tarbox presided at the session on refining and introduced H. A. Ross, combustion engineer of the National Petroleum Association and the Co-operative Engineering Service He had found "personal opinion resistance" by the management, superintendent and workers alike to be the greatest obstacle to methods for correcting fuel losses. Three years ago he had visited refineries and with a single exception had found great fuel losses. Finally when he visited the refineries with authority to make changes the results were better. When profits were large the refiner ignored suggestions for fuel economy but with smaller profits they are more ready to co-operate to save fuel.

Dr. E. D. Ries, director of industrial research of the Pennsylvania State College, explained that for five or six years there had been an increasing tendency toward fundamental investigation into factors controlling refining operations. The large companies had done a great deal but the smaller ones had given very little toward that end. The Pennsylvania State College had been promoting research successfully and they were anxious to co-operate with the industry.

Group Reports

Reports were made from groups of the department of manufacture. Pittsburgh was represented by D. W. Hovey, Warren by H R. Lewis, Bradford by H. H.

(Continued on Page 152)

THOMAS R. WEYMOUTH TO HEAD OKLAHOMA NATURAL GAS CORP.

Thomas R. Weymouth, president of the Iroquois Gas Corp. of Buffalo, N. Y., has been selected to succeed R. C. Sharp, who has resigned as chairman of the board, president and general manager of the Oklahoma Natural Gas Corp., with headquarters in Tulsa. Mr. Weymouth is expected to reach Tulsa about May 1 to familiarize himself with details of his new work and to assume charge of properties and affairs of the company about July 1.

Mr. Weymouth is one of the outstanding natural gas men in the country. He is a director and member of the board of management of the Natural Gas Department of the American Gas Association; is a member of the technical committee of that department, and has always taken a most prominent part in the affairs of the natural gas association. As an executive, he has been confronted with numerous problems peculiar to the natural gas business and to the relation of that business with the communities being served, and he has gained wide prominence through his solutions of these problems.

The Oklahoma Natural Gas Corp. serves 53 cities and towns and operates 3,400 miles of pipe line in Oklahoma and Kansas. Recently it acquired the natural gas properties of the Oklahoma Gas & Electric Co.

Mr. Sharp came to Tulsa in 1917 from Pittsburgh, Pa., to accept an executive position with the Oklahoma Natural Gas Corp. and became executive vice president, later being made president and general manager and more recently chairman of the board.

Thomas R. Weymouth

Water Conditions in Hendricks Pool

Remarkable Long Sustained Upward Trend of Well Average; Recuperation After Pinching, and Orderly Rate of Completions

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 23.—One of the most remarkable features of the Hendricks Field in Winkler County is the upward trend of the well average for over five months. This, in itself, is indicative of the field's power.

The accompanying graph of the field shows three definite characteristics of "the biggest thing outdoors." First, and probably the most remarkable, is the definite upward trend of the well average for such a long period; second, is the apparent recuperative powers of the field after being pinched in sharply on various occasions, and, third, is the rather orderly rate of completion of wells.

No major field in history, so far as available records reveal, which was produced to any appreciable measure of its capacity, has shown an upward trend in well average for such a length of time, Seminole, Smackover, Powell, Wortham and Mexia not excepted.

On April 20 the field reached a new peak when its 132 wells produced 239,631 bbls., or an average of 1,760 bbls. per well. At the same time a great many wells were pinched far below their capacity because of insufficient storage and the intrusion of water in some.

Authorities point out that any field showing such an increase in well average over such a length of time is apparently draining, both laterally and vertically, a tremendous reservoir. Moreover, this same characteristic indicates that up to this time the water encroachment has not injured the field as a whole.

It is wise not to attempt to extend the indicated trend line upward. But it does not follow that after the line breaks and starts a downward trend that the field has reached its peak, for most major fields have reached their peak after the well average was definitely on the downward trend.

Unusual Combination

Hendricks, as is shown by the graph, had an unusual combination in production. Both the well average and production well line mounted upward simultaneously. In most major fields during the flush period the well line is going up and the well average downward, but in the Hendricks Field both are going up at the same time.

Hendricks is what might be termed a normally drilled field because it averaged about 20 new wells per month for five months. Had the situation been different in that field and the oil was needed or pipe line facilities permitted the rapid drilling of wells it is probable that in excess of 300 wells would have been drilled at this time instead of 132 wells. Drilling has been normal, however, because of the circumstances, and the fluctuations in the curves are greatly due to the pinching of wells.

Proration, which is expected to be in effect by May 1, will cause a sharp drop in both the well average and producing curves. It is conservatively estimated that the average production per well could easily be 2,000 bbls. and sustain that production for an appreciable length of time with the present number of wells. To reach that figure would mean only 24,000 bbls. daily to the new peak reached last Friday. One well in the north end of the field is rated to be capable of adding that much to the daily production, while there are a score of other wells in the field pinched.

At present there are 80 wells in the field making water, and the average water percentage in the wells making water is close to 32 per cent. Some of the wells, as is shown by the accompanying table, are making 99 per cent water.

Despite this rapid encroachment of water, the well average has shown an upward trend. Moreover, those wells showing water were pinched, in most cases, when the water appeared.

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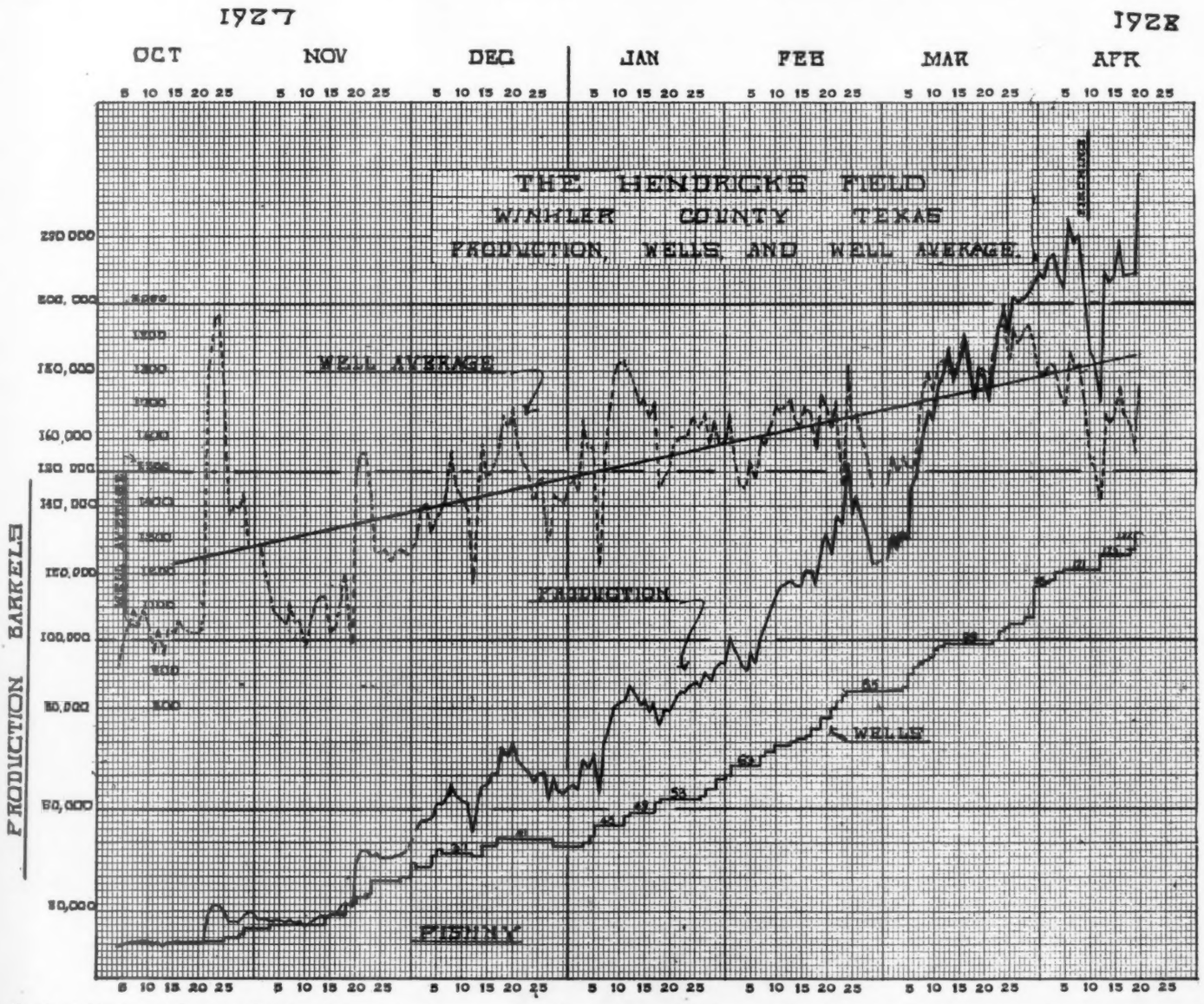
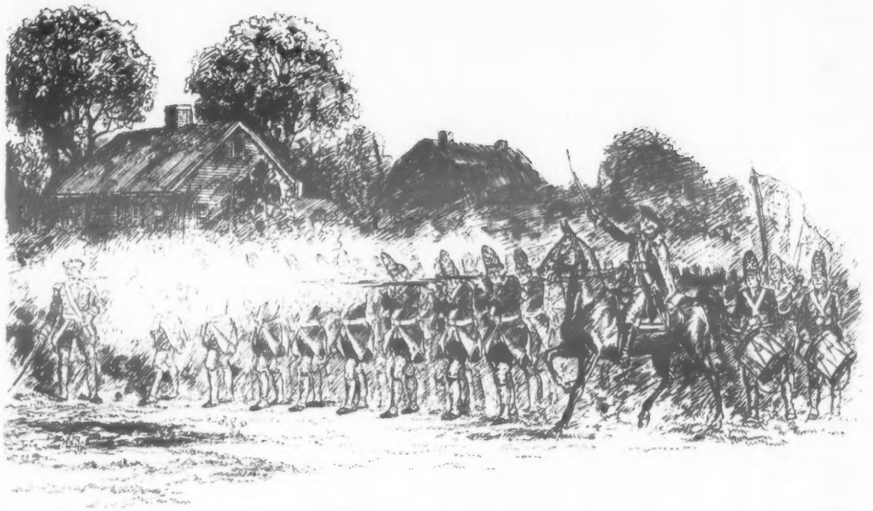


Graph of Hendricks Pool in Winkler County showing average production per well, number of wells and daily production. For the purpose of illustration the well average curve is on a scale ten times that of the production curve.

COME TO NEW ENGLAND!



SEE WHERE HISTORY WAS MADE

HERE five Presidents were born. Four of the houses still stand. Here Paul Revere made his midnight ride and the tea was tossed into Boston Harbor. Here lived Emerson and Longfellow, Whittier and Hawthorne. Stand in the rooms where their great works were produced. Toss a stone on the ever-growing pile which pilgrims have built on the site of Thoreau's cabin.

Follow the trail to the white farmhouse where Calvin Coolidge took the oath by the light of a kerosene lamp. Stand by the bridge where the Minute Men drove back the redcoats, and "fired the shot heard round the world." Visit Bunker Hill. Sit in Daniel Webster's study, and the Wayside Inn. See where Harriet Beecher Stowe wrote "Uncle Tom's Cabin." Take a trip to Plymouth Rock. See the Great Stone Face in the White Mountains. Go down to the harbors where the whalers of New England found respite from the sea.

And, while you are making history live again, visit the industries of modern New England. Their products go all over the civilized world. The men who make them are friendly and glad to welcome visitors.

It is an interesting country, a friendly country—good roads, good people, and clean, inexpensive inns. New England invites you and the children. Come!

THE Standard Oil Company of New York places at your disposal its Socony Touring Service to help you plan your tour and advise you of road conditions in New England and New York State. Address Socony Touring Service, 26 Broadway, New York City.

You may also obtain unusually fine road maps of the territory either by writing in advance, or at the 30,000 Socony stations.

The courteous service at these stations, and the uniform quality of Socony Gasoline and Socony Motor Oil, will also add to the pleasure of your trip.

GASOLINE **SOCONY** MOTOR OIL

STANDARD OIL COMPANY OF NEW YORK

Plan for Greater Gallonage Endorsed

Eastern Refiners and Marketers Association Think Well of It. Newspapers Showing Interest in Touring

The board of directors of the American Oil Men's Association at its regular meeting in Chicago last week unanimously voted that the organization approved heartily the editorials and the plan outlined by The Oil and Gas Journal for increasing the sale of gasoline through encouraging the greater use of motor cars for touring and other purposes.

This action followed by similar endorsement of the suggestion by the State Executive Club, composed of state officials of marketing organizations reported a week ago.

At the same time the members of the National Petroleum Association, the organization of eastern refiners, in session at Cambridge Springs, Pa., was adopting a resolution, favoring such a publicity campaign to induce automobile owners to spend their week ends and other leisure or vacation periods in tours to historic points and places of interest. A committee was authorized to represent the association in any plans agreed upon to further the movement.

A National Advertisement

New interest was added to the movement by the appearance in the Saturday Evening Post of a two-page advertisement from the Standard Oil Co. of New York, headed "Come to New England" and reproduced in miniature on the preceding page of this issue of The Oil and Gas Journal. The attraction compelling illustration and reading matter was used to call attention to the Socony Touring Service offering to help plan tours and advise intending tourists of road conditions.

By a coincidence, on the preceding page of the Post was the advertisement of the Portland Cement Association using exactly the same method of calling attention to the use of concrete, not any particular brand, but concrete as a product, just as it has been proposed to have an oil association advertise the greater use of gasoline.

Point is given to the factor of touring in enlarging the demand for gasoline in the report of gasoline tax collected in Oklahoma in 1927. While there was an increase of only 3 per cent in automobile tax collections the Oklahoman calls attention to the remarkable fact that there was an increase of 15 per cent in gasoline tax collections. "The Nation's Highway" offers the explanation that the increase in gasoline tax was not due to increased traveling by Oklahoma motorists but was due to the increased number of "foreign" tourists attracted to Oklahoma during the past year.

Loafing by Motor

With the opening of the touring season the daily newspapers are devoting renewed attention to touring conditions. The Kansas City Star in a recent editorial "Loafing by Motor" said:

"The process of adaptation to the motor car and good roads go on. They affect the individual and the family on tour and the towns along the way. The towns are showing increasing consideration for the traveler and the traveler is more disposed to respond in kind. There always will be those who prefer to make long, hard drives for particular objectives, rather than to progress more leisurely; but if this preference does not become less manifest it will not be because the places along the way do not offer attractive resting places.

"Catering to tourists is not limited to providing tourists' camps for summer travelers; many small hotels and well equipped cafes are available for the off season or mid seasons. It would seem, therefore, that those who have learned to travel light, to take into their cars only the outfit needed, loafing by motor car is likely to become more popular as the loafing places become more attractive.

"For example, one may take a leisurely tour into Arkansas from Kansas City. There are several desirable stops between this city and Joplin, but it is not a hard drive through to Neosho, which is an interesting place to spend a day or two. There are other towns in picturesque southwest Missouri that invite the tourist. But the towns along the main highways of Arkansas have shown the greatest evidence of adaptation to new conditions. One is surprised on entering places like Bentonville, Rogers, Fayetteville, Russellville and Conway to note the extent of first class paving, the orderly and attractive appearance of both residence and business sections, the completeness of all kinds of service the traveler

(Continued on Page 84)

NATIONAL PETROLEUM ASSOCIATION APPROVES GREATER GALLONAGE PLAN

CAMBRIDGE SPRINGS, Pa., April 23.—Members of the National Petroleum Association in the closing session of their semi-annual meeting adopted a resolution favoring a publicity campaign to encourage automobile owners to spend their week ends and other vacation periods in tours to historic points and other places of interest.

R. A. WOTOWITCH

R. A. Wotowitch of the Henry L. Doherty Co., New York, called the attention of the membership to the plan to increase consumption advocated in recent issues by The Oil and Gas Journal. The president of the association was authorized by a resolution to appoint a committee to represent the association in any plans which might be agreed upon to further the campaign. It was the sense of the meeting that the oil industry would benefit very materially through an increased consumption of gasoline and lubricating oils, in any well-directed plan to secure a greater use of automobiles and other motor vehicles.

The National Petroleum Association is the oldest trade association of the oil industry. Its membership includes practically all of the independent refinery organizations in the eastern area. Many of these companies have large marketing facilities and for that reason are particularly interested in any program to increase the consumption of gasoline and lubricating oils.

Advertising Expert Gives Advice

Assured of Success of Campaign Based on Experience of Many Years in Other Industries

By L. Ames Brown

First Vice President, Lord & Thomas and Logan

That advertising is continually changing public opinion and public habits has been so conclusively demonstrated that there can be no question of the feasibility of the much discussed concentrated campaign to increase the sale of oil and gasoline.

Viewing the situation after lengthy study and wide experience in this type of advertising, I am firmly convinced that a co-operative publicity drive on the part of the petroleum industry presents almost limitless opportunities for business expansion.

There is no lack of evidence of the fact that American motorists are beginning to regard their cars more as a means of swift conveyance than as a source of recreation. Radio, golf and other forms of entertainment are unquestionably decreasing the mileage of millions of automobiles. Unless speedily checked, this tendency may have a markedly serious reaction on the per capita consumption of gasoline and oil. This in addition to the admitted fact that high compression motors and other engineering advancements are already exerting a decidedly noticeable curtailment. Competing producers themselves advertise the fact, seeking to build up their own sales rather than extend the demand at large. It is a question whether this is wise without more extended and more farseeing action.

Essential to Industry

It would therefore seem essential to the future of the industry that the public mind be forcefully turned to the health and enjoyment features of more frequent and more extended touring. That this can be done is evidenced by the continued propaganda of the railroad and steamship companies in stimulating the urge to travel; by the work of the Oil Heating Institute in selling the idea of oil heated homes; by various companies urging that the public indulge in different foods and drinks; and by the successful efforts to get the country at large to beautify and perpetuate its homes. Likewise in the activity of the electrical industry in promoting the greater use of electrical appliances and more adequate wiring for the home.

In fact, the petroleum industry itself has proved its own case in persuading the motorist to change the oil in his car every 500 or 600 miles. Such habits can be deliberately created and once created they last—if the effort is consistent.

Compared to the task of the transportation companies, the petroleum project is simplicity itself. Let the railroads impart a desire to see the country. There is added allure in taking the trip by automobile. To the trained advertising man the devising of such advertisements as will drive this home offers an interesting opening for the preparation of attractively effective pages with a compelling copy appeal.

Bound to Create Desire

Merely to state the facts and to present them against interesting pictorial backgrounds is bound to create desire on the part of the reader. And there is another great advantage. In the first place, a majority of the audience addressed already owns cars. Thus, resistance is automatically low. Motorists can be made to feel they are not getting their money's worth from their initial investment—that they are missing an important part of what they are entitled to expect from it. Then too, unlike the railroads or steamship journey, automobile tours require no lengthy planning and tedious saving. The whole family may start out any day—for as long or as short a run as they desire.

Therefore, to create, or rather recreate, the touring urge is to materially and permanently increase the sale and use of oil and gasoline. Just stop to consider what one short extra pleasure ride a week would mean in sales—even if only a fair percentage of the total motoring population are converted to the habit.

With competition as keen as it is today in the automobile industry, and with the obvious need for an expanding market, it appears self evident that a co-operative effort such as is being discussed can readily be presented to the industry with such convincing force that it will become a countrywide movement in a comparatively short space of time.

The ramifications of its benefits would be manifold, and in launching such a campaign the industry would not only be taking steps to add to its own profits, but would make a mighty contribution to the increased prosperity of the nation. Once properly launched and consistently carried out, the movement would unquestionably pay for itself many times over.

Wall Street View of Oil Securities

Prospect of Better Earnings Since Unfavorable Developments of Past Year Thought to Have Been Discounted

By Special Correspondent

NEW YORK, Apr. 24.—Pool operations on the oil stocks practically nonexistent in the New York markets for close to a year past, have again made their appearance, the petroleum share group this week experiencing the widest advancing movement seen for many months. Owing to the combination of depressed conditions in the oil industry and the strong forward surge of rails, industrials, motors and other groups, the oils have been relegated to the background for practically the entire big bull movement of the past year or more.

For a year or more now the oils have been under selling pressure, receiving little professional support and practically none from the general public. Poor earnings, coincidental with depressed conditions within the industry, have been stressed to the utmost, in fact, many interests now believe that the unfavorable aspects of the situation have been overemphasized.

During the past few weeks there has been an appreciable improvement in sentiment in the oils. Professionals seeking for some other groups of stocks to operate on naturally turned to the oils, which have been neglected for so long. Investors who are wary of the market on many classes of securities which have soared to record high levels for all time in the bull movement during the past six months or more have turned their attention to the dividend payers among the oils. At present there seems to be a general feeling that all of the unfavorable developments of the past year in the petroleum industry have been thoroughly discounted, and overdiscounted in many instances.

During recent weeks news from the oil industry has been more favorable than for months past. Prices for gasoline have advanced; fuel oil has become stabilized; kerosene is higher, a few minor upward adjustments in crude oil prices have been made, and the spectre of overproduction, while by no means eliminated, is now believed to be less menacing as a result of the success which has attended the efforts of many of the prominent factors in the oil industry in working out their conservation program.

Merger Talk Renewed

Merger talk affecting the oil companies is rampant, and it appears that some of the rumors may work out. Wall Street is determined to have Sinclair Consolidated Oil in a merger. A few weeks ago it was believed that something of the sort was actually in progress, three officials of the Prairie Oil & Gas Co. spending several days in New York, part of the time in conference with officials of the Sinclair company. Nothing has yet developed from these conferences, and it has been denied that any merger or purchase negotiations are on between these two companies.

Marland Oil was likewise tied with Sinclair in a merger by Wall Street. According to this report, the two companies were to be brought together, forming one of the largest oil organizations in the country. The story had it that Amos L. Beaty, former chairman of the board of The Texas Corporation, was to head the merged organization. This rumor seems to have as much basis of actual fact as others of the type.

Still another story linked Sinclair, Phillips and Marland in a triple combination which was to rank up with the largest as a producer, refiner and marketer of petroleum and refined products. This story also has died a natural death, as was the case with other rumors linking Standard Oil of New York, and several other companies, with Sinclair.

Another merger story which has gained wide circulation, and which is expected to have more behind it than other rumors indicates a probable merger of Pan American Western Petroleum Co. with the Richfield Oil Co. of California, which was recently admitted to trading privileges on the New York Stock Exchange. J. A. Talbot, president of Richfield Oil, has denied that any such merger is under negotiation or consideration, but the report still persists. According to the gossip on this deal, Doheny interests for some time have been willing to sell their holdings in Pan American Western, and in consequence the Street expects a change in control of the latter company. Control of Pan American Western rests in 100,000 class "A" shares, all of which are held by the Petroleum Securities Co. which is owned by the Doheny family.

Merger talk involving other companies is making its appearance from time to time, to be promptly denied in each case thus far.

Better Earnings Hoped

One factor which is being stressed by the newly awakened bull faction on oils is that market conditions have improved to the point where the big integrated companies will show better earnings this year than was the case in 1927. This applies particularly to the companies forming complete units—producing, refining and marketing. These companies cut inventories to the bone at the close of 1927, and consequently are not expected to have any downward adjustments to make from their profits during 1928. On the contrary, it is probable that inventory values will mount during the current year. Gasoline prices have improved to a marked extent, which indicates better earnings for the companies whose principal volume is in motor fuel. The improvement on gasoline is much more than appears on the surface, in as much as many of the large companies have succeeded in eliminating many of the preferential price contracts with their distributors which gave them enormous volume, but nothing substantial in the way of profits. In other words, the large companies have decided to stop competing for losses, and are marking their selling prices to a basis which insures a profit. In as much as this upward adjustment is general, the large companies do not stand to lose any volume, in the aggregate, as disgruntled distributors will have virtually no place to turn to take on a line to supplant that which they have been handling. Independents are of course undercutting the larger companies, but the margin offered by the independents in most cases is not

(Continued on Page 84)

Experimenting on Crude Recovery

Several Problems of Fundamental Nature Being Investigated by Bureau of Mines at Bartlesville Station

By J. L. Dwyer

An important series of petroleum engineering experiments from which much practical data will unquestionably be obtained is being conducted by the Oil Recovery Section of the United States Bureau of Mines Experimental Station at Bartlesville, Okla. This section is under the direction of R. Van A. Mills, petroleum engineer, assisted by Joseph Chalmers and John S. Desmond, associate petroleum engineers, I. H. Nelson, assistant petroleum engineer and Donald W. Bennett, laboratory assistant.

The section is at present attacking several problems of fundamental importance in oil recovery work. The first problem is to determine the quantity of oil and the total ultimate percentage recovery that may be expected from oil sands under different conditions by ordinary methods of recovery before stimulative methods, such as repressuring and flooding are applied; in other words, this is a study to determine ways of estimating how much oil and what percentage of the oil originally present, we are now leaving in the fields which have undergone depletion by ordinary methods of production.

The second problem is a study of the relations between the degree or percentage of depletion by ordinary methods and the recoveries that may be obtained by repressuring. This involves a study of the relative advantages of maintenance of pressure, early repressuring, and different degrees of deferred repressuring.

Third, a study of the relative propulsive efficiencies of compressed air and natural gas in repressuring operations.

Fourth, a study of the formation of bad oil and inert noncombustible gas incident to repressuring operations and methods of preventing or combating these troubles.

In attacking these problems the engineers of the Oil Recovery Section have found it necessary to design and build their own laboratory and a large part of their experimental equipment. This was necessary not only because of shortage of funds but also on account of the unusual nature of the work in which a far greater accuracy of all measurements must be maintained than would be required in actual field operations. The Oil Recovery Section also owes much of its success to Harry A. Buss, chief instrument maker who has assisted in designing and making a large part of the equipment now in use.

Many Problems Encountered

At the outset of the investigation, many difficult problems had to be solved; these included the accurate measurement of small volumes of gas at high pressure; the accurate measurement of pressure changes; the maintenance of constant temperature conditions; the accurate measurement of gases at pressures continually varying from several hundred pounds per square inch down to atmospheric pressure; the changes in volume and gravity of oil during experimental operations; the changes in the character of the gases being used which are in part the result of selective solubility of natural gas in oil; other effects of selective solubility of the constituents of natural gas in oil; the volume changes in oil when saturated with natural gas under high pressure and when natural gas is liberated from solution in the oil at different pressures. Safety problems and problems in mechanical design and construction have played an important part in getting this work properly and safely started. There is an inevitable element of danger in experimental work at the high pressure being used in these experiments with crude oil, compressed air, and natural gas. The Bureau of Mines

Interior view of the constant temperature bath after water has been removed, showing the flow tubes in position for a comparative run. The long tube on the bottom of the bath at the left is the solubility chamber in which gas is put into solution in the oil. The other long tube on the bottom is a stirring cylinder in which there are propellers to maintain a circulation of water when the bath is being kept at constant temperature. Note the zinc electrodes bonded to these long tubes to prevent corrosion.

(Continued on Page 154)

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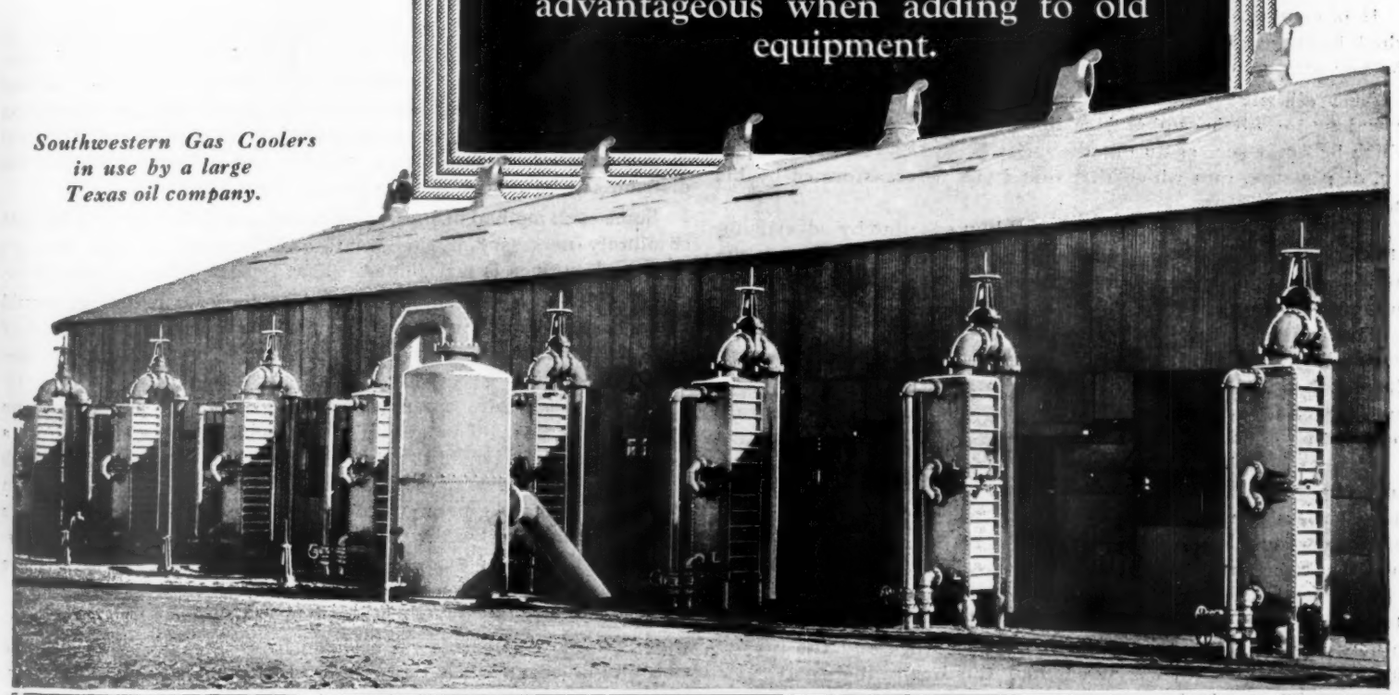

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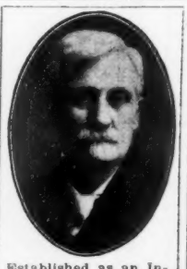

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SELLING SCENERY

The idea that gasoline consumption could be increased greatly by inducing motorists to use their cars more is strikingly supported by the two-page advertisement of the Standard Oil Company of New York in the current issue of the Saturday Evening Post, reproduced elsewhere in this number of The Oil and Gas Journal.

It is a splendid example of the advertising, in a national way, which has been advocated in these columns as a means of increasing the sale of gasoline by promoting demand.

After all, what does the car owner buy when he tells the station attendant to "fill 'er up"? Not the five or ten gallons of liquid which he never sees again but the miles of transportation, of scenery, of pleasure, into which that liquid can be transformed by his motor.

What more natural then than to sell him gasoline by advertising what it means to him? Sell him scenery, advertise adventure on the broad highway, picture the joys of travel and picnicking, of golfing and fishing, of new sights and old places.

The railroads, tourist agencies and resorts have been selling scenery for years. When a great oil company like the Standard of New York finds it pays to advertise the attractions of New England the effectiveness of selling scenery to increase the demand for gasoline is established.

A canvass by The Oil and Gas Journal of the leading oil companies indicates that they all endorse the idea in principle and indeed several are already applying the plan in their own marketing territory through the use of illustrated booklets, maps, radio talks, and other agencies.

The suggestion of a national advertising campaign representative of the entire industry may seem rather sweeping to those who are naturally jealous of safeguarding their own work and the investments they have already expended along this line in their particular territory. Those who have done expensive pioneering in any movement of general application and benefit reasonably feel that they are entitled to the advantage of their enterprise and expenditure. But in this case the gain in enlarged sales would be shared by all.

Many executives of oil companies have already taken up the subject with their marketing departments for serious consideration. Action may not be immediate because as with the producers and the curtailment plan there are familiar habits of thinking to be disturbed, skepticism to be overcome and individual interests to be convinced that what is good for the industry is best for them, but being fundamentally sound and a pressing need, as in the case of co-operation on curtailment, intelligent study will eventually lead to its adoption.

It would not be primarily a campaign to sell anybody's gasoline but to sell more gasoline as the more gasoline sold the better would be the general market for every distributor and for the industry at large, producers and refiners as well.

Those accustomed to think in terms of brands of motor fuel rather than of the effect of greater total gasoline sales on the whole industry may at first thought deem it a doubtful innovation, a sort of casting bread upon the waters that they could not trace. Yet it is not new. It has been tried and proved in several other industries, notably the cement industry, the Oregon fir industry, the cypress industry, and the copper and brass industry. The gasoline industry has a much wider appeal than any of these because almost everybody nowadays uses gasoline whereas only builders and dealers are interested in the general advertising of the cement and lumber and copper industries.

The cement association, the copper and brass association and the various lumber associations have found that advertising their products, not as an individual brand but as a general staple, increased business for the whole industry. Yet for one person who would thus be interested in greater use of cement, copper, Oregon pine or Southern cypress, thousands would be led directly to use and buy more gasoline by effective advertising of beautiful scenery and pleasant outings.

A stimulation of travel by motor car, locally and country-wide, would be felt by every oil company. The car owner would naturally fill his tank at his accustomed home station before starting out. On evening trips and week-end trips he would, in most cases, be in the same marketing company's territory. On longer tours he might buy some other company's product but in turn the touring motorists from that territory would be visiting and buying gasoline from some other company so that all would share in the additional gallonage sold.

Enlarging gasoline sales by a concerted advertising campaign to interest car owners in wider travel is one of the simplest and most easily applied remedies for the oil industry's situation, we are told by a national advertising expert, who has contributed an interesting article on the subject, appearing elsewhere in this issue. Disposal of sufficient of the surplus to stabilize the industry will put the distributor, the refiner and the producer on a sound basis.

Some such method of increasing travel and gallonage will become absolutely necessary if the trend towards more mileage through improved engines is maintained. That is something to think over.

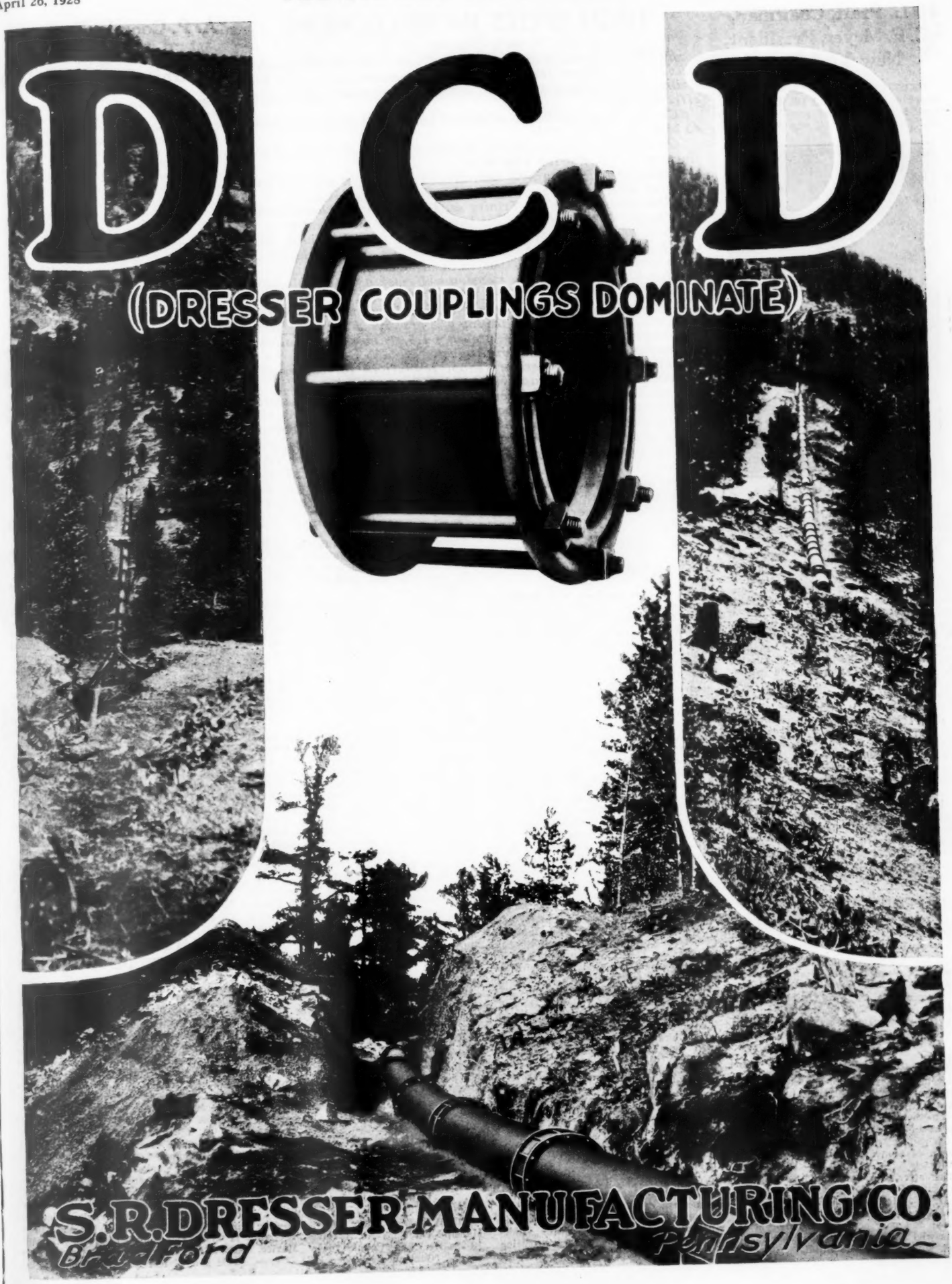
An effective advertising campaign to increase gallonage would require comparatively small, if any, additional expense since part of the present advertising appropriations could be diverted to that purpose.

Several companies are now preparing copy for advertising on this general line. The example of the two-page "spread" in a national weekly is bound to prove a great stimulus to the idea which can be applied to evening and week-end trips as well as to vacation tours. The vastly greater number who can conveniently take the shorter outings week after week will amount to more in the aggregate than the sum of the vacation period touring, and it will be more universally distributed.

But to be most effective the idea should be promoted on a nation-wide basis until it becomes a national habit to seek a new route or visit a new scene when the car is taken out for a pleasure trip. Motoring over the same streets or around the same town becomes as insipid as seeing a "movie" a second or third time.

The gasoline salesman who wants greater gallonage should remember that it is not what the customer buys but what he uses that counts.

The station attendant who knows his roads and can suggest enjoyable drives has the best selling talk in the business.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Bradford - Pennsylvania

H. L. Pratt, Chairman, C. F. Meyer, President, New York Standard

NEW YORK, Apr. 21.—Charles F. Meyer of the Standard Oil Co. of New York has been elected president to succeed Herbert L. Pratt, who at the same

H. L. Pratt

time was made chairman of the board. Henry C. Folger resigned the chairmanship recently.

Mr. Meyer began his business career in 1886 as an assistant statistician with the old Standard Oil organization in Boston. In 1893 he was sent to Bombay, India, as manager of the Standard Oil interests. He became a member of the company's foreign trade committee in 1907, at which time he was transferred to New York. He joined the Standard of New York following the dissolution in 1911 of the old Standard Oil organization. In 1918 he was advanced to a vice presidency and for some years has been the senior vice president.

Mr. Meyer is a native of Boston and is 63 years old. He was educated at the Roxbury Latin School. He is married and lives at 960 Park Avenue.

PIPE FOR NEW LINE

HOUSTON, Tex., Apr. 24.—The Roxana Petroleum Corp., or Shell Pipe Line Corp., is unloading 42,000 tons of 10-inch pipe at the port here. It is estimated this pipe would provide a line 420 miles long, approximately the distance from the West Texas fields to Houston.

OIL PRODUCTION COURSE FOR TEXAS UNIVERSITY

AUSTIN, Tex., Apr. 21.—Beginning with the long session of 1928-29, the University of Texas will offer an organized four-year course in petroleum production engineering leading toward a bachelor of science degree. This move has been approved by the general faculty and board of regents. The courses will be offered in the college of engineering of the university.

The new course will combine special subjects already offered in the departments of geology, chemistry and other main divisions of the university in addition to those in the college of engineering and new courses in petroleum production which will be taught by a member of the bureau of economic geology of the university.

The latter courses will not be offered during the coming long session, according to Dr E. H. Sellards, director of the bureau, as they will be considered advanced and only senior and junior students who have the required preliminary work will be eligible to enroll.

HIGH SPOTS IN FIELD NEWS

Hendricks Pool, Winkler County, Texas, reaches new peak of 239.631 bbls. Water thought essential to production. Texas State Railroad Commission announces order for proration will be issued effective May 5.

Caldwell County, Texas, wildcat, 6 miles north of Luling, flowed 40 bbls. 37 gravity crude.

Gulf Refining Co. got second producer in Sorrento Dome, Ascension Parish, La., flowing 1,000 bbls.

Seminole touched a new low, 274,253 bbls. The ten test wells south of Little River are calculated to be running high.

First completion since Trinity sand discovery in Champagnolle, La., gauged 4,820,000 feet of gas but no sign of oil or water.

Over 700 derricks were destroyed by a tornado which swept Caddo Parish, Stephens Field. Louann, Griffin and Smackover districts, causing loss of $5,000,000 in Smackover.

Blue Ridge, Gulf Coast extension well, making 2,000 bbls. starts renewed activity.

New Potrero Pool, California, established as link between Rosecrans and Inglewood. Oil is testing 47.5 gravity. First Long Beach peak expected before June 15, probably 175,000 bbls., to be followed by another, possibly higher, in August.

Oklahoma-Kansas operators adopt resolutions for conservation but amend proposal to supervise wildcatting.

New Strawn sand pool found in Jack County, Texas; started 100 bbls. an hour and last reported swabbing 14 bbls. an hour.

The Roberts Field in Howard County, Texas, was extended a half mile by a well in which 2,000 feet of oil rose while coming out with the tools; total depth 2,950 feet and slopping over. The Texas Railroad Commission has called a meeting of Southern Howard County operators in Roberts and Settles pools particularly, at Fort Worth Saturday. These pools are now being held under control by co-operation of operators.

Late Fields

OKLAHOMA

The Greater Seminole area reached a new low Sunday, 274.253 bbls., and produced 275.291 bbls. from 1,087 wells for the 24 hours ending Tuesday morning, 7 a. m., of this week. The output by pools was:

Little River	41.034
Bowlegs	72.700
Earlsboro	91.725
Seminole	54.699
Searight	15.133
Total barrels	275.291

Both the Independent Oil & Gas Co.-Highway Oil & Refining Co. well, and the offset, the Gypsy Oil Co.'s No. 1 Canard south of Little River have been pinched in under the agreement of the Seminole operators. The Independent-Highway well is No. 1 Harris, SW cor. NW NW Section 23-7-6, and the Gypsy well is No. 1 Canard, SE cor. NE NE Section 22-7-6, a direct west offset. The wells are pinched in to 60 bbls. daily under a back pressure of 100 pounds.

The Texas Company and the Independent Oil & Gas Co.'s No. 1 Hotulka, NW cor. SW NW Section 23-7-6, is drilling in the Viola lime found at 4,027-4,120 feet, and has 2,500 feet of oil in the hole from this stratum. The Mid-Continent Petroleum Corp.'s No. 1 Bruner, SE cor. SE Section 11-7-6, will probably be in within the next two days, along with the Reiter-Foster Oil Corp.'s No. 1 Bunyard, SE cor. NW SW Section 14-7-6. The Mid-Continent well had Viola 4,215 feet, and is drilling in the Simpson sand with 3,000 feet of oil in the hole.

A wildcat well in southeastern Oklahoma has a showing of oil. It is the Gilcrease Oil Co. and Mohawk Drilling Co.'s No. 1 Wolf, NE cor. SE NE Section 21-1-2, in Murray County, which had sand at 1,896-97 feet, and is now drilling at 1,925 with a show of water. The identity of this sand has not been determined.

WEST TEXAS

FORT WORTH, Tex., Apr. 24.—Gibson & Johnson's No. 1 Daugherty, 9 miles north of the Hendricks Pool, was drilling at 3,004 feet Tuesday morning with no change in well's status. Independent Oil Gas Co.'s eastern extension of the Hendricks Field, No. 1 McCabe, Section 36, Block B-5, is flowing 10 bbls. per hour and drilling at 3,035 feet. The lime softened at 3,020 feet. The increase in production was at 3,016-20 feet and 3,030-35 feet.

The Roberts Field in southern Howard County was extended half a mile north by a well estimated good for 3,500 bbls. F. H. E. Oil Co.'s No. 1-D Roberts, SE SW Section 136, Block 29, topped pay at 2,950 feet, and 2,000 feet of oil rose while coming out with the tools; total depth 2,950 feet and slopping over. The well is half a mile north of the discovery well. It will probably be drilled in this week.

The Texas Railroad Commission issued a call for a meeting of southern Howard County operators to prevent that area, and in particular the Roberts and Settles Pools, from possibly being drilled rapidly and possibly throwing new flush on the crude market. The meeting will be held in Fort Worth Saturday. Roberts and Settles Pool operators are holding back operations at this time under a gentlemen's agreement.

Roxana corporation's No 8-C, SE NW NW Section Section 29, Block B-5, drilling at 2,965 feet is flowing by heads. It made 149 bbls in 12 hours and is showing 1¼ per cent water. Same company's No. 4-D, Section 41, Block B-5, was drilled deeper from 2,765 to 2,893 feet and is making 200 bbls. per hour, 20 per cent b.s.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Apr. 24.—Butte and others' wildcat, No. 1 Branyon, Caldwell County, 6 miles northeast of Luling Field, at 2,244 feet, total depth, not cased and with fluid in the hole, flowed about 40 bbls. of 37 gravity oil during the past 24 hours. Luling oil is much lower in gravity. The Butte well is in southeast corner of R. B. Jarmon Survey and is either in base of Austin or in formation just below that. Austin was topped at 2,075 feet. The well is 8 miles north of Joe Bruner's well on Davis farm at Luling, producing under much the same circumstances.

IMPORTANT TESTS

ROSWELL, N. Mex., Apr. 24.—The Marland Oil Co.'s No. 1 Eaves, Section 19-20s-37e, Lea County, New Mexico,

(Continued on Page 153)

A. P. Coombe Resigns; W. T. Holliday Named Ohio Standard Head

Ending a service of 44 years with Standard Oil companies, Andrew Palmer Coombe resigned during the past week as president of the Standard Oil Co. of Ohio. Mr. Coombe retires on pension and will devote his time to travel. He has been succeeded by W. T. Holliday, former general counsel of the company.

Mr. Coombe was the third president of the Standard Oil Co. of Ohio, the parent organization of the Standard group. He succeeded F. B Squire in 1908. The only other president was the elder John D. Rockefeller. For 10 years Mr. Coombe was in charge of the Standard Oil operations in Mexico. Later he became an official of the Standard Oil Co. of New Jersey, resigning that position to become head of the Ohio Standard. Under his direction the Standard of Ohio's refining and marketing facilities were greatly expanded.

The new president, Mr. Holliday, has practised law in Cleveland, Ohio, for 20 years. He graduated at Cornell University in 1905 and from Harvard Law School in 1908. He became associated with a law firm representing the Standard Oil Co. of Ohio immediately after his graduation from the law school. He became general counsel of the company in 1917.

INVENTOR OF SECTIONAL STEEL BUILDINGS DEAD

While in the midst of plans for extending the usefulness of the sectional steel frame buildings which he had introduced in the oil industry, Andrew George Ehlinger died suddenly of heart disease April 19, in his home at Tulsa. Mr. Ehlinger was born in Galt, Canada, 66 years ago and in infancy was taken to Cleveland, Ohio, where his childhood was passed. For 25 years he resided in Chicago, going from that city to Tulsa 12 years ago.

The first sectional steel buildings used by oil companies in the Mid-Continent Field are said to be of his design and this type of structure for engine houses, power houses, etc., was adopted wiedly. He gained a wide acquaintance among oil company officials and purchasing agents. Mr. Ehlinger was perfecting plans for the first all-steel frame buildings of his own invention for residental purposes at the time of his death. He had just finished the final blue prints Thursday when he was stricken.

Mr. Ehlinger leases his wife; one son, Stanley J. Ehlinger, Tulsa; two brothers, Peter Ehlinger, Minneapolis, Minn., and Charles Ehlinger, Cleveland, Ohio, and three sisters, Mrs. Margaret Schutchelm, Mrs. Barbara Vennum and Mrs. Shlunt, all of Cleveland.

WORLD'S LARGEST TANKER BRINGS CRUDE FROM PERU

NEW YORK, Apr. 20.—The motorship C. O. Stillman, the largest tank seamer afloat, arrived at the Standard Oil Co. of New Jersey Bayonne refinery this week with a cargo of oil from Talara, Peru. The tanker is owned by the International Petroleum Co., controlled through the Imperial Oil Co., Ltd., by Standard Oil Co. of New Jersey, and is named for C. O. Stillman, president of Imperial Oil Co., Ltd. Upon the arrival of the vessel directors of Standard Oil Co. of New Jersey and Imperial Oil made a visit of inspection as guests of Mr. Stillman.

The new tanker is of 22,715 deadweight tons, powered with a Diesel engine, and has a capacity of 155,000 bbls. of oil. Its motive power is furnished by two 6-cylinder Diesel engines, developing 4,300 horsepower, giving the tanker 11 knots speed loaded. The "Stillman" is 586 feet long over all, 75 feet 4 inches wide and 44 feet 6 inches deep.

New Peak in Hendricks and Winkler

Additional Big Wells in Northern Extension of Pool. Storage Situation Improved. Further Extension in Yates Field

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 23.—A new peak in production and additional big wells in the northern extension of Hendricks featured the reports from Winkler County and another extension to the Pecos Pool, along with scattered wildcat developments throughout West Texas, summarized the report from the Permian Basin.

While proration machinery for the Hendricks Field was being perfected the West Texas market threat climbed over to a new peak when 132 of its wells made 239,631 bbls. on Friday, April 20. The production by companies and wells is as follows:

Company—	Wells	Prod.
Atlantic O. P. Co.	13	56,079
Cranfill & Reynolds	5	18,728
Gulf Production Co.	9	15,914
Humble O. & R. Co.	12	37,048
Independent O. & G. Co.	15	14,045
Landreth Prod. Co.	6	10,413
Magnolia Petroleum Co.	5	3,067
Murchison Oil Co.	5	860
Pure Oil Co.	8	6,400
Republic Production Co.	3	7,366
Roxana Petroleum Corp.	15	29,334
Southern C. O. P. Co.	25	30,297
Texon Oil & Land Co.	4	6,590
California Oil Co.	6	3,490
Total	132	239,631

Storage Improved

The recovery of Winkler, which dropped the preceding week due to congested storage conditions and the encroachment of water in several wells, thereby causing them to be pinched down, more than offset the previous week's loss, and sent West Texas to a new peak of 373,241 bbls. Slight gains in other territories aided in sending the area to the new record. The storage situation at this time is a little improved and, according to a report, a few days old the producer who had the most storage had 400,000 bbls. of tankage available.

One of the reasons for the field reaching a new peak is because the Atlantic Oil Producing Co. opened its wells to see what they would do. The 13 wells made 56,079 bbls. and three of those were not flowing to capacity.

Humble Pipe Line Co. is at present looping its 8-inch line from Hendricks to McCamey. Additional storage in the field is being rushed to completion. Several companies had rather large storage programs under way at the first of the month and they are at this time speeding up work on those tanks.

Movement of crude from the field is around 140,000 bbls. daily. Last week it averaged 139,775 bbls. daily and totaled 978,427 bbls. for the seven-day period.

Tank car movements from the field increased to some extent when the figures showed a total movement of 445,183 bbls., or a daily average of 63,597 bbls.

Pipe line companies moved 502,398 bbls. at the rate of 71,771 bbls. daily. The local refining consumption was 29,746 bbls. or 4,249 bbls. daily. The remaining production of the field went into field storage.

Hendricks Completions

The four completions reported from Hendricks average 4,975 bbls. per well or a total of 19,900 bbls. This high well average was brought about by the completion of a 12,000-bbl. well in the northern extension of the field. This well was Humble Oil & Refining Co.'s No. 1 T. G. Hendricks-C, which topped the pay at 2,806 feet and bottomed at 2,834 feet. The well made 12,000 bbls. flowing wide open during the first 24 hours.

Southern Crude Oil Purchasing Co. is bringing in a big well in the north part of the field. That company's No. 2 T-67-3-B topped the pay at 2,735 feet and penetrated the pay 30 feet. It flowed 5,261 bbls. the first 19 hours and 7,172 bbls. the first 24 hours. The well is being drilled deeper and flowing at the rate of 375 bbls. per hour.

Humble Oil & Refining Co.'s No. 12 Hendricks-A in Section 34, Block B-5 flowed 280 bbls. the first 30 minutes at 2,950 feet but showed 40 per cent water. Frequently wells in this section of the field start showing water soon after they begin flowing. Further south Humble company's No. 6-B in Section 29, Block B-5 flowed 80 bbls. per hour and shows 3 per cent b.s. and water. In the same section Magnolia Petroleum Co.'s No. 5 Hendricks flowed 80 bbls. of fluid, 85 per cent water, when it topped the pay at 3,110 feet In the NW Section 34, Block B-5, Gulf Production Co.'s No. 11 Hendricks flowed 145 bbls. the first hour from pay at 2,950-3,050 feet. The well was then pinched to 58 bbls. per hour.

The southeastern extension of the field Independent Oil & Gas Co.'s No. 1 McCabe in Section 36, Block B-5, is still drilling and has increased its pay to around 100 bbls. daily and is drilling in lime at 2,999 feet. This well is getting down deep in the lime. The formation has been pretty hard all the way down and it is probable the well will be given a shot.

Northeast of the Field

Nine miles to the northeast of the field Gibson & Johnson's No. 1 Lum Daughtery, C SW Section 3, Block 74, is shut down at 2,989 feet to mix drilling mud. While the well has not been condemned it is generally believed it will not make a well in the Hendricks Field horizon, but does stand a chance to produce from the same horizon which produces in the Roxana-Llano wells over to the east. The well had a showing of oil at 2,756 feet and a show of gas at 2,863 feet. A 13-foot core was taken at 2,964-77 feet which showed porous gray lime with sandy streaks in it and which showed a little oil. The well is making around 1,000,000 feet of gas from this depth.

McMan and Marland Oil Co.'s To. 16 Yates blew in unexpectedly at 1,103 feet while running 6-inch casing and made 3,795 bbls of oil the first 12 hours through a 2-inch line under 200 lbs. back pressure. This filled all the available storage and the oil line was turned to earthen tanks. The well has been brought under control. It is along the north line and is the farthest east well along the McMan-Marland strip, Section 34½, Block 194, G.C.&S.F. Survey.

Yates Pool Extension

Up in the territory recently extended in the Yates Pool by Mid-Kansas Oil & Gas Co. and Transcontinental Oil Co.'s No. 1 Yates-F in Section 63, the same operators completed their No. 1-G, a west offset to the extension well. No. 1-G made 2,155 bbls. in 5 hours through one 4-inch flow line from pay at 1,192-1,387 feet.

Pandem Oil Co. & Gibson have sold their leases in the Pecos River Bed on the east edge of the Pecos Pool to A. G. Herd and associates of New York who are organizing the Oil Operators Trust Co It is reported the sale price is in excess of $300,000, but only a small part of which was cash.

A short while prior the property gauged 3,300 bbls. of pipe line oil from seven wells. This property does not constitute a threat to the Yates proration agreement. The wells will have to be pinched in to a fraction of their potential production to keep back the water intrusion. The River Bed lease under the proration plan has a daily outlet of 400 bbls.

The several wildcat showings and failures in West Texas will be found in the wildcat drilling report.

WILDCAT OPERATIONS IN WEST TEXAS

Week ended April 21, 1928

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock Oil Co.'s No. 1 J. W. Harris, C SE Sec. 12, Blk. A-46, Public School Land, elev. 3,167 ft.	Top salt 1,690 ft.; total depth 2,860 ft.; preparing to set 6-in. casing.
BORDEN COUNTY	
Dixon Creek Oil Co.'s No. 1 Clayton & Johnson	Top lime 2,410 ft.; hole full water 2,765-90 ft.; drlg. 2,810 ft.
Marland Oil Co.'s No. 1 G. E. McDavid, C SW Sec. 156, Blk. 25, H.&T.C. Sur., elev. 2,310 ft.	Top salt 1,250 ft.; drlg. 3,405 ft.; hole full water 3,325-60 ft.
Marland Oil Co.'s No. 1 Alexander Murphy, C SW Sec. 66, Blk. 25, H.&T.C. Sur. (3,250-ft. test)	Location.
BREWSTER COUNTY	
Cowden & Bowser's No. 1 Jackson & Harmon, C N half Sec. 1, Blk. 331	Rigging up.
Cowden & Bowser's No. 1-A Jackson & Harmon, Sec. 1, Blk. 331, T.C.R.R. Sur.	Rigging up second hole.
J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 182, Blk. 9, G.H.&S.A. Sur.	Shut down 1,035 ft.
Reese & White's No. 1 Kimbale, C NE Sec. 204, Blk. 9, G.H.&S.A. Sur.	Shut down 1,738 ft.
Van Mc hail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,700 ft.
Wilcox & Anderson's No. 1 Gage, Sec. 8, Blk. 300, T.C. R.R. Sur.	Underreaming 2,020 ft.
COKE COUNTY	
W. H. Brown et al's No. 1 W. L. Foster, SE cor. Sec. 142, Blk. 2, H.&T.C. Sur., elev. 2,222 ft.	Shut down 3,600 ft.
Lipan Oil Co.'s No. 1 S. M. Conner, Sec. 71, Blk. 2, H.& T.C. Sur.	Show oil 1,224-34 ft.; shut down 3,375 ft.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C., elev. 2,750 ft.	Shut down 2,739 ft.
CONCHO COUNTY	
The Exploration Co.'s No. 1 Hartgrove, Blk. 240, J. Schouch Sur., elev. 1,718 ft.	Shut down 940 ft.
Sartain Oil Co.'s No. 1 Evridge	Spudded and shut down.
CRANE COUNTY	
Gulf Prod. Co.'s No. 4 W. N. Waddell, C of SW SW Sec. 3, Blk. B-25	Location.
Gulf Prod. Co.'s No. 49 J. T. McElroy, Sec. 201, Blk. F, C.C.S.D.&R.G.N.G.R.R. Sur.	Top salt 1,115 ft.; top lime 2,695 ft.; drlg. 2,914 ft.; flowing by heads.
Gulf Prod. Co.'s No. 50 J. T. McElroy, Sec. 200, Blk. F, C.C.S.D.&R.G.N.G.R.R. Sur.	Location.
CROCKETT COUNTY	
Anderson & Williams' No. 1 University, SE cor. NW NW SE Sec. 19, Blk. 47	Drlg. 670 ft.
V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Sec. 4, Blk. 2, I.&G.N. Sur.	Shut down 2,110 ft.
R. B. Coyle's No. 1 H. M. Halff, C Lot 18, Sec. 70, Blk. 1, I.&G.N. Sur.	Shut down 1,230 ft.
Dixie Oil Co.'s No. 1 George Thompson, Sec. 72, Blk. 1	Location.
Grayburg Oil Co.'s (formerly Osage Oil Co.'s) No. 1 Thompson-Collins, Sec. 70, Blk. 1, I.&G.N. Sur.	Drlg. 1,063 ft.
Grayburg Oil Co.'s No. 2 Thompson-Collins, Sec. 70, Blk. 1, I.&G.N. Sur.	Drlg. 510 ft.
Grayburg Oil Co.'s No. 8 H. M. Halff, 660 ft. S of N L Sec. 70, Blk. 1, I.&G.N. Sur. (1,980 ft. E of their No. 2)	Location.
Henshaw and McMan Oil & Gas Co.'s No. 1 W. Owens, C NW Sec. 17, Blk. G.G., G.C.&S.F.R.R. Sur.	Top salt 1,140 ft.; top lime 2,060 ft.; drlg. 2,609 ft.
Humble O. & R. Co.'s No. 2 P. J. Sorg Est.	Total depth 2,690 ft.; top pay 2,591 ft., lime; swab. 400 bbls. 18 hrs.; shut down for storage.
Republic Prod. Co.'s No. 1 L. B. Powell-B, Sec. 52, Blk. BB, G.C.&S.F. Sur.	Location.
Transcontinental Oil Co.'s No. 1 J. D. Atwood Est., NW cor. Sec. 7, Blk. P?, T.C.R.R. Sur.	Location.
Van McPhail's No. 1 George Thompson, C 10-acre tract No. 31, Sec. 70, Blk. 1	Location.

(Continued on Page 104)

WEST TEXAS
Daily Average Production by Leases
Week Ending April 21

Company, Lease—	Wells	Bbls.
Crane County		
Church et al:		
University	1	51
Church & Weekley:		
University	3	1,038
Church & Fields:		
Duoil-University	1	561
Eastland Oil and Collett:		
University	8	2,916
Gulf Prod. Co.:		
All leases	67	16,666
Humble O. & R. Co.:		
University	13	4,092
Independent O. & G. Co.:		
University-A	5	*924
University-B	2	*731
Landreth Prod. Corp.:		
Cowden-Anderson	16	8,136
Magnolia Pet. Co.:		
University-Hardwicke	14	2,257
University-O'Keefe	12	1,748
State-Lasseter	3	111
Magnolia et al:		
University	4	54
Pecos Oil Co.:		
University	16	2,809
Prairie O. & G. Co.:		
University	5	*448
State-Lasseter	7	*7,497
Simms and Atlantic:		
University-A	9	*1,487
University-B	1	49
University-C	8	*3,469
University-D	12	*3,359
University-E	1	160
Stidham & Thrasher:		
University	1	4
The Texas Co.:		
University	1	196
University-Beasley	1	15
Tidal Oil Co. et al:		
University-B	2	52
University-C	1	28
University-E	1	77
University-F	8	*948
University-G	3	**0
University-H	2	5
University-I	8	*2,606
Total Church and Fields Pool	236	62,473
Average per well		264.8
Miscellaneous Crane County		
Gulf Prod. Co.:		
Waddell	1	13
McMan O. & G. Co.:		
Hughes	2	60
Marland Oil Co.:		
All leases	14	482
The Texas Co.:		
King	9	140
Union Land Co.-F	1	0
Miscellaneous total	29	692
Grand total Crane County	265	63,165
Average per well		238.3
Pecos County		
Pandem Oil Co. et al:		
Pecos River Bed	7	237
California Oil Co.:		
Yates, Lease 1	13	4,069
Smith, Lease 1	1	317
Smith, Lease 3	12	3,590
Gulf Prod. Co.:		
All leases	11	6,048
Humble O. & R. Co.:		
M. A. Smith	6	1,831
M. A. Smith-B	4	1,674
Kirby Pet. Co.:		
J. H. Tippett	1	47
Kirby Pet. Co. and Edson:		
J. H. Tippett	1	207

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New Strawn Sand Pool in Jack County

Oil Tests 40 Gravity. Young County Most Active in Leasing. Gray County Wildcats Are Feature in the Panhandle

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 23.—Panhandle Refining Co.'s wildcat, No. 1 J. M. Daugherty, near the center of the west line of Isaac Hughson Survey, A-256, Jack County, came in for the big news of North Texas during the week closed when it opened a new Strawn sand pool. The well failed to live up to its initial indications, however.

It came in flowing at the rate of 100 bbls. per hour from sand at 2,973-75 feet but was shut in after being permitted to flow 55 minutes because of lack of storage. During the following day storage was built and when the well was opened it made only a 30-bbl. head.

Six-inch casing with a packer was set and the hole deepened 1 foot while being cleaned out. Following that it made 60 bbls. and several hours later it made a 75-bbl. head. The hole was again deepened, this time the sand being penetrated 6 feet more, and according to last reports from the well it was swabbing at the rate of 14 bbls. per hour.

No. 1 Daugherty is close to the Young County line and is the best deep producer in Jack County. Lydecker's No. 1 State Bank of Bryson in the J. P. McKenzie Survey, Jack County, was recently completed at 3,342 feet pumping 40 bbls. daily.

Crude from No. 1 Daugherty tests 40 gravity and brings $1.40 on the current market. The well is on a 1,030-acre block owned by the Panhandle company. There is a wide territory around the well that has not been tested. When the well made its flashy initial show it prompted an equally flashy lease and royalty play which has since ebbed.

Young County Activity

So far as leasing goes Young County seems to be the most active territory at present. As a result of the shallow discovery north of Loving there has been an extensive lease play in that general section of Young County. Wildcat blocks are being assembled in all directions from the shallow pool and a great many are being assembled with a drilling obligation in addition to a small bonus.

The Loving shallow area offered only a couple of small wells last week, one a 40-bbl. well and the other a 50-bbl. well. Half a dozen shallow wildcats in various directions from the main pool were abandoned. The shallow pay is found around 500 feet and many of the wells have been completed with comparatively heavy flush production. However, production declines rapidly in the pool.

In south Young County, J. E. Lucas' No. 1 Matthews was attracting attention because of its possibilities of extending the deep Stovall pay. It is located northeast of the old South Bend Pool in the J. Lamar Survey, Abstract 1,335. It topped the pay at 4,235 feet, almost the same depth of the Stovall No. 1 in South Bend. It started off making close to 2,000,000 feet of gas and then bridged. Casing is to be run and a test made.

Gohlke Pool

With the activity in the Gohlke Pool, which has about "shot its bolt," at a low ebb, Archer County was without developments of a sensational nature. The pool has been defined in all directions and the only drilling in progress in that area is a couple of inside wells. The pool at this time has 37 wells making on an average of 86 bbls. Production of the pools by operators and wells is given in the following table:

Bridwell Oil Co.	1	260
L. T. Burns and associates	3	44
Fain-McGaha et al	16	1,531
J. A. Gardner	2	101
F. H. Gohlke	8	241
Johnson & Frazier	6	555
Petroleum Producers	1	332
	37	3,164

Wichita Falls District

Wichita County led in the list of completions in the Wichita Falls district and included in that county's list were a number of good wells. Most of them were completed in the older producing area. A few of the wells are old producers that have been deepened to a more prolific pay zone. Production in the Wichita Falls district registered another increase.

Panhandle Area

Panhandle was crowded back in the shadow by inactivity although several developments of merit were reported from the far northern territory. Completions in the Bowers Pool were small in initial production with the exception of Operators Oil Co.'s No. 2 W. Jackson, Section 88, Block B-2. That well swabbed and flowed 800 bbls. initially from granite wash pay at 2,851-68 feet.

In Dallam County, Woods Brothers and associates' No. 1 Capitol Syndicate, Section 19, Block 17, one of the deep tests in Panhandle, was abandoned at 4,505 feet after getting a hole full of water at 4,007-4,127 feet.

Pete Woodley's No. 1 Boyle, SW cor. Section 55, Block 13, Wheeler County, H.&G.N. Survey, had 1,000 feet of oil in the hole at 2,173 feet but is fighting a bad cave at 2,217 feet which let in water and shut off the oil. The sole completion in Wheeler County during the week was an 11,000,000-foot gas well.

Gray County Wildcats

Wildcats in Gray County are the most closely followed operations in the area. Danciger Refining Co.'s No. 1 Crank, SW cor. NW, Section 163, Block 3, I. &G.N. Survey, got a showing of gas at 3,055 feet and is drilling ahead at 3,088 feet. South of the Bowers Pool, Eslick and associates' No. 1 Mrs. Hopkins, Section 84, Block B-2, cased off a showing of oil at 3,042-45 feet. The well had 2,000,000 feet of gas at 3,050 feet and is drilling blue shale and granite wash at 3,062 feet.

Majestic Oil Co.'s deep test in the Bowers Pool, No. 6 Bowers, Section 89, Block B-2, drilled into a hole full of water at 3,985 feet but is drilling ahead. Over to the west of the pool, Skelly Oil Co.'s No. 1 Bradford, Section 118, Block B-2, swabbed 38 bbls. in 12 hours from pay at 2,944-90 feet. The well was drilled deeper and had a showing of oil at 3,222-27 feet and salt water at 3,325 feet. It is being plugged back.

A few wells in the Chapman area, recently opened by Ray & Massie's big well in Section 51, Block 25, are nearing the pay and are expected to be in the completion stage within a few days. Ray & Massie's well is regarded as the worst well in Panhandle to keep clean. The oil flows at a temperature of 53 degrees and the well is off production most of the time because of paraffin trouble. Last week the well only averaged 215 bbls. daily, whereas a week prior to that period it made 1,375 bbls. daily. The crude is high gravity crude.

Production of the Panhandle continues to fall chiefly as a result in the natural decline of wells in Hutchinson County. Little new work is being started there and operators hold little hope of Hutchinson County regaining its former prestige until new pools are discovered in that county.

Ranger District

Most of the activity in the Ranger district centers in Brown County and the Clark-Buffalo Pool in that county is the most active in wildcat and semi-wildcat work. Considerable work is in various stages of progress around that recently discovered pool. The best completion in that pool was a 225-bbl. well completed on the Henshaw Oil Corp.'s Bush lease. In the immediate vicinity of the pool there are several operations nearing the expected pay depth.

Considerable activity is reported in the area a mile south of the Cross Cut Field where Cranfill & Reynolds opened a new pool a few weeks ago.

The Matthews Pool in Shackelford County, opened by the Tannehill Oil Co. several weeks ago, is one of the most active areas in Shackelford. In this area Petroleum Producers Co. completed a 620-bbl. well last week. It is reported the White Eagle Oil & Refining Co. is on a deal to buy a half interest in the Tannehill properties in the Matthews Pool north of Albany.

Roth & Faurot shot their No. 2 Peter Smith in Section 19, Block 1, and the well is estimated to be good for 300 bbls. or better after it is cleaned out which is a good well for Coleman County. The sand was topped at 2,907-37 feet and the hole was bottomed at 2,940 feet. It was shot with 40 quarts at 2,916-36 feet and while cleaning out 12 feet off bottom it was flowing at the rate of 12 bbls. an hour.

In the northwest extension of the Blake Pool in Brown County, Phillips Petroleum Co. shot its No. 11 Hickman with 5, 14 and 10 quarts at 1,265-85 feet and the well responded making 350 bbls. But after the shot the Midland Oil Co.'s wells north of it went dead. Midland company's No. 1 was shot a few days ago and made 165 bbls. after the shot.

Production of the three areas showed a decrease as a result of the losses in the Panhandle. Both the Wichita Falls district and Ranger district showed increases but not sufficient to overcome the 2,600-bbl. decline in the Panhandle.

PANHANDLE COMPLETIONS
Week Ending April 21
Dallam County

Wood Brothers and others' No. 1 Capital Syndicate, Section 19, Block 17, had a hole full of salt water at 4,007-4,127 feet and has been abandoned at 4,505 feet.

Gray County

Danciger Oil & Gas Co.'s No. 1 J. S. Morse, SE NE SW Section 2, Block 26, H.&G.N. Survey, swabbed 150 bbls. of 48.6 gravity oil from the granite wash at 2,469-2,520 feet. Operators Oil Co.'s No. 2 W. Jackson, NW cor N half NE Section 88, Block B-2, swabbed and flowed 800 bbls. daily from the granite wash at 2,851-68 feet. The well was drilled to the total depth of 2,964 feet. Danciger Oil & Gas Co.'s No. 7 W. Jackson, Section 88, Block B-2, H.&G.N. Sur-

(Continued on Page 110)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending April 21, 1928

ARMSTRONG COUNTY

Company, Well, Farm, Name, Section and Block—	Remarks—
United Oil & Trust Co.'s No. 1 J. P. Reck, Sec. 162, Blk. 4, H.&G.N. Sur.	Drlg. by bit, 3,780 ft.

BRISCOE COUNTY

C. S. Rice's No. 1 J. C. Anderson, SE cor. NW NW, Sec. 22, Blk. B-3, B.S.&F. Sur.	S.D., 1,620 ft.

CARSON COUNTY

Amarillo Oil Co.'s No. 1 E. S. Polling, C NE of N 80 acres of NE, Sec. 12, Blk. Y-2, B.&B. Sur.	Drlg., 2,441 ft.
Amatex Dev. Co.'s No. 1 E. S. Polling, Sec. 22, Blk. B-Y	T.A., 2,110 ft.
Empire G. & F. Co.'s No. 1 J. C. Noel, C SW, Sec. 41, Blk. 4, I.&G.N. Sur.	Drlg., 980 ft.
Empire G. & F. Co.'s No. 1 E. W. Sheridan, C NE, Sec. 243, Blk. B-2, H.&G.N. Sur.	Set 20-in. csg., 215 ft; drlg., 2,480 ft.
Gulf Prod. Co.'s No. 1 W. E. Cobb, SE cor. S half NE, Sec. 202, Blk. 3, I.&G.N. Sur.	Drlg. lime, 2,152 ft.
Marston Oil Co.'s No. 1 J. L. Noel	Fish., 3,050 ft.
Skelly Oil Co.'s No. 8 H. Schafer, NE SW SW, Sec. 88, Blk. 4, I.&G.N. Sur.	Set 10-in. csg., 1,077 ft; show oil, 3,075 ft; drlg., 3,096 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor. Sec. 73, Blk. M-17, B.S.&F. Sur.	Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur.	S.D., 510 ft. for csg.

CHILDRESS COUNTY

Hoover & Calloway's No. 1 O. L. Tucker, Sec. 736, Haggard Sur.	Spudded and S.D.
C. L. Sloane et als' No. 1 B. P. Smith, Sur. 49, F. P. Knott lands	Set 6-in., 2,902 ft; S.D., 4,005 ft.

COTTLE COUNTY

Explin. Co.'s No. 1 Richards	Spudded and S.D.
Explin. Co.'s No. 4 Matador Land & Cattle Co., C, Sec. 46, J. H. Stephens Sur.	Rig on ground.

DALLAM COUNTY

Marland Oil Co.'s No. 1 A. M. James, C SW W half, Sec. 21, S. H. McElreath Sur.	500 ft. wtr. in hole; U.R. 5-in., 3,953 ft; T.D., 3,985 ft.
Marland Oil Co. et als' No. 1 Capitol Synd., Sec. 36, Blk. 18, Capitol Synd. land	S.D., 3,500 ft.

DONLEY COUNTY

A. T. Drlg. Co.'s No. 1 F. E. Harrington, Sec. 39, Blk. 3-C	1,200 ft. wtr., 3,115-22 ft; show gas, 3,140-60 ft; dry G.W., 3,200-93 ft; cmt. 5-in., 3,510 ft; fish. for bailer, 3,527 ft.
Martin & Watson's No. 1 W. J. Ball, Sec. 22, Blk. E, D.&P.R.R. Sur.	Cellar.

FLOYD COUNTY

Explin. Co.'s No. 1 S. H. Boone, C. C. H. Johnson Sur.	S.D., 680 ft. for fuel.
Explin. Co.'s No. 1 Land & Cattle Co.	S.D., 2,825 ft.
Hoffer Oil Corp.'s No. 1 Nelson	Spudded and S.D.

GRAY COUNTY

Archer Blake's No. 1 Turneaux, SW cor. Sec. 111, Blk. B-2	S.D., 255 ft.
Biggs et als' No. 1 Morse, SW cor. Sec. 2, Blk. 26, H. &G.N. Sur.	3,000,000 ft. gas, 2,158-94 ft; fish. bit, 2,220 ft.
Cole O. & G. Co.'s (was Magdalene Oil Co.'s) No. 1 J. E. Williams, Sec. 17, Blk. 1	S.D., 3,360 ft.
Danciger O. & R. Co.'s No. 9 W. Jackson, NW cor. NE NW, Sec. 88, Blk. B-2	Junked hole, 2,880 ft; skidded 50 ft. N; drlg., 2,010 ft.
Danciger O. & R. Co.'s No. 1 W. Crank, SW cor. NW, Sec. 163, Blk. 3, I.&G.N. Sur.	Cmt. 8-in. csg., 2,518 ft; drlg. lime, 3,080 ft.. show gas, 3,055 ft.
Danciger et als' No. 1 R. Smith, SW cor. Sec. 149, Blk. 2	Location.
Danciger et als' No. 1 L. H. Webb, NW cor. NW, Sec. 62, Blk. 25, H.&G.N. Sur.	Location.
Dillard et als' No. 1 Furney, NE cor. SE, Sec. 202, Blk. B-2, H.&G.N. Sur.	Spudding.
Donley Gray Oil Co.'s No. 1 J. W. Gordon, Sec. 79, Blk. 3	Wtr., 3,380 ft. and 3,430 ft. show oil; H.F.W., 3,650 ft; T.D., 3,870 ft; U.R. 6-in. csg., 3,852 ft; S.D., 4,152 ft.
Delmar Oil Co.'s No. 1 F. Foster, NW cor. SW, Sec. 55, Blk. B-2, H.&G.N. Sur.	Cmtd. 10-in., 1,131 ft.

(Continued on Page 103)

What Price Gasoline

Every refiner who sells straight run fuel oil is disposing of a low price product which will yield 50% premium gasoline, 47% distillate and premium fuel oil, or in other words, 97% liquid recovery by use of the Dubbs Cracking Process with Flashing System

What premium would be asked for a crude which would give similar yields from skimming, even though the gasoline obtained is a bad knocker, while the gasoline obtained from the Dubbs Process commands a premium price

Universal Oil Products Co
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Seminole Output Drops to New Low

Test Wells South of Little River Calculated to Be Running High. No Possibility of Excess New Oil Until August 1

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The Greater Seminole Field continues its slight drop in output, although last week every one of the pools had additional wells completed. On Saturday the field touched a new low, making 276,304 bbls.

The territory south of the Little River Field is now the scene of the most careful observation of any field in the country. The status of the 10 test wells and offsets to the producing wells in this region has been checked carefully, with the result that many of the wells are calculated to be running very high. The most recent event was the completion of the Gypsy Oil Co.'s No. 1 Denmark, which is ½a half mile from any production, and which was one of the original 10 test wells in the area. This well is located NW cor. SW SE Section 11-7-6, and is flowing at the rate of 145 bbls. hourly. It produced 2,021 bbls. the first 24 hours while it was being drilled in. It means when the exact picture of this region is considered that a line of production running southwest and northeast for a distance of 1½ miles may now be anticipated, as the subsurface condition of the Reiter-Foster well indicates that it will be located close to the top of the structure. The Reiter-Foster well is in Section 14-7-6, and is running 140 feet high based on the Viola lime. The Gypsy well had the Wilcox sand from 4,297-4,300 feet.

There are two other wells south of Little River which are due in almost any time Under the terms of the Seminole operators' agreement the test wells will be shut in until the offset wells attain a similar depth. There is no possibility of any deluge of production being found in this region until after August 1.

The Seminole city pool shows an increase this week over last week, owing to the fact that many pumping wells in this pool happened to be off production last week, and are now back on again.

Increased Runs to Storage

In the Greater Seminole area, it is also slightly noticeable that many producers are increasing their daily runs to lease storage where this is possible. This may be interpreted as meaning that the producers feel that an advance in crude prices is imminent and that they are gambling against such a contingency.

The only oil transaction came from the report that the Blackwell Oil & Gas Co. had sold two 80,000-bbl. tanks full of oil to the Ozark Pipe Line Co. at the market price, plus the cost of the tanks. The tanks contained about 150,000 bbls.

The new line of the Champlin Refining Co. has not yet started running crude, owing to some delay in operations. This company has built and purchased pipe line facilities which connect its refinery at Enid, Okla., with the Seminole Field. The line passes through Davenport and the Lyons-Quinn region of Okfuskee County, where the company has a substantial production of its own. It is announced that Champlin has succeeded in obtaining quite a bit of oil from producers in the Lyons Quinn region, and this is probably why no exceptional effort has been made to obtain pipe line connections in the Greater Seminole area.

Allen Pool

The Allen Pool of Seminole-Hughes-Pontotoc Counties was the spot where a large production deal was consummated late this week. Negotiations were started last week, and the deal was completed on Monday of this week. The sale involves 2,500 bbls. daily production and some 2,000 acres of non-producing leases which were sold by W. R. Ramsey of Oklahoma City to the Sun-Ray Oil Co. of Tulsa for a price while, while not reported, is believed to be $400,000 in cash and $600,000 in oil. Mr. Ramsey has been very prominent in the development of this pool.

The daily production by companies and leases in the Allen Pool on Friday, April 20, is given below:

	Bbls.
Louisiana Oil Ref. Co.:	
Reed	927
Perry	618
McElroy	432
Harjo	722
Warfle	369
Punluste	637
Total	3,706
W. R. Ramsey (now Sun-Ray):	
Webb	434
Harjo	58
Parker	169
Milner	151
Butler	14
Warfle	26
B. Butler	77
Smith	40
Cully	1,502
Total	2,491
Homa-Okla Oil Co.:	
Adams	174
McCall	486
Milner A	137
Milner B	60
Wheeler	13
Total	870
C. B. Shaffer:	
Yoakum	840
Mid-Cont. Pet. Corp.:	
Fleet	2,662
Westheimer & Daube:	
Milner	350
Wade	218
Total	568
Indian Terr. Ill. Oil Co.:	
Bingham	244
The Texas Company:	
Hyde	735
Grand total (from 70 wells)	12,096

WILDCAT OPERATIONS IN OKLAHOMA

NORTHERN OKLAHOMA

GRANT COUNTY

Otstot Development Co.'s No. 1 Snyder, NE cor. NE Sec. 6-28-3w ..... Shut down 4,518 ft.
J. V. Bailey and others' No. 1 Maddox, C SE Sec. 18-27-5w ..... Estimated 2,000,000 gas, spray oil 4,835-42 ft.; underreaming 4¼-inch casing.
Thraves and others' No. 1 C. D. Fuss, SW cor. NW NW Sec. 30-27-4w ..... Abandoned 1,230 ft.
Burns & Beasley's No. 1 Bolsterton, SW cor. NW SW Sec. 24-27-3w ..... Rig abandoned.
Brasil & Moses' No. 1 Goutier, SW cor. NW Sec. 34-26-4w ..... Shut down for pipe 650 ft.
Lambert and others' No. 1 Tabor, SE cor. NE SE Sec. 23-26-3w ..... Abandoned after spudding.
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w ..... Fishing 5,640 ft.

HARPER COUNTY

Kopisch Oil Co.'s No. 1 Johnson, NE cor. SE Sec. 24-27-21w ..... Rigged up and shut down.
Hoffer Oil's No. 1 Cooper, NW cor. SE SE Sec. 12-25-22w.. Shut down 4,130 ft.

WOODS COUNTY

Sooner State Oil Co.'s No. 1 Marcum, C SW Sec. 20-27-15w ..... Rig abandoned.
Victor Oil Co.'s No. 1 Buskirk, SW cor. SE Sec. 10-26-15w ..... Hole full water, 775-800 ft.; shut down 900 ft.
McCray Oil & Gas Co.'s No. 1 Whitney, NE cor. NW SE Sec. 19-24-14w ..... Shut down 1,880 ft.

KAY COUNTY

Boucher and others' No. 1 Cooper, SE cor. SE Sec. 23-27-2w ..... Drilling 2,835 ft.
Ponca Lee Oil's No. 1 McNeil, NW cor. NE Sec. 32-26-2e.. Shut down 2,795 ft.
Tonkawa Development Co.'s No. 1 McDaniels, SE cor. SE Sec. 15-25-1w ..... Fishing 4,638 ft.
Corley and others' No. 1 Williams, SE cor. NE SW Sec. 7-21-1w ..... Shut down for casing 1,930 ft.

WOODWARD COUNTY

Otstot Development Co.'s No. 1 Simmons, SE cor. SE Sec. 32-24-17w ..... Shut down for pipe 1,430 ft.
Wight & Wahl's No. 1 Williams, C NW Sec. 16-23-20w... Rig.
Randau & Mooney's No. 1 Parker, SE cor. NE NW Sec. 4-23-16w ..... Shut down 1,092 ft.
Sharon Oil Co.'s No. 1 Elmore, SW cor. SW Sec. 25-21-21w ..... Shut down 2,772 ft.
Burgoyne Brothers' No. 1 Barnes, SW cor. SE NE Sec. 15-21-19w ..... Shut down 870 ft.
Wight & Wahl's No. 1 James, C NW Sec. 16-23-20w..... Rig.

GARFIELD COUNTY

E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w ..... Hole full of water 4,650 ft., shut down 4,720 ft.
Failing et al's No. 1 Gorusch, SE cor. SE Sec. 14-24-3w... Swedging pipe 4,767 ft.
Fleming and others' No. 1 Wengert, NW cor. NW Sec. 3-22-5w ..... Shut down 750 ft.
Beopple and others' No. 1 Schweer, C SW NE Sec. 12-21-4w ..... Shut down 1,850 ft.
Marland and Barnsdall's No. 1 Looman, NE SE Sec. 9-20-4w ..... Shut down 5,740 ft.
Marland Oil Co.'s No. 1 Miller, SW cor. SW Sec. 12-20-4w.. Shut down at 4,586 ft., waiting on test Sec. 9-20-4w.

ELLIS COUNTY

Oklahoma Northern's No. 1 Young, NW cor. NW Sec. 9-21-25w ..... Shut down 300 ft.
Hoffman and others' No. 1 Ottes, NW cor. NE Sec. 20-15-8w ..... Rig blown down.

NOBLE COUNTY

Barnsdall Oil Co.'s No. 1 Bumberger, NE cor. NW SE Sec. 11-21-1 ..... Cellar.

KINGFISHER COUNTY

Slick & Harrington's No. 1 Cromer, SE cor. NE NE Sec. 25-19-5w ..... Location.
H. H. Morgan's No. 1 Buscon, SW cor. SE NE Sec. 30,-16-9w ..... Shut down 1,610 ft.
Galt-Brown Oil Co.'s No. 1 Wolff, NW SE Sec. 6-16-7w.. Drilling 3,897 ft.
McKinney & Crawford's No. 1 Sturgeon, NE cor. SW Sec. 27-16-6w ..... Drilling 4,410 ft.
Wiley & Manahan's No. 1 Johnson, C NW Sec. 26-16-5w.. Shut down 4,512 ft.

LOGAN COUNTY

Champlin Refining Co.'s No. 1 Clark, SE cor. SW Sec. 8-18-4w ..... Casing parted 5,825 ft. fishing.
Sinclair Oil & Gas Co.'s No. 1 Webber, SE cor. SE Sec. 18-19-4w ..... Drilling past pipe 4,500 ft., total depth 4,808 ft.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w... Cleaning out 3,788 ft.
Garber & Pulse's No. 1 Widdoes, NE cor. SE NW Sec. 32-18-3w ..... Shut down 1,200 ft.
T. B. Slick's No. 1 Bryan, SW cor. SE Sec. 28-17-1 ..... Plugging back to sand 5,630 ft.; having casing trouble.
Willis and others' No. 1 Sweezy, SW cor. NW SE Sec. 20-17-3 ..... Shut down 4,677 ft.
W. R. Ramsey's No. 1 McMillan, NW SW Sec. 24-15-2w... Hole full of water at 4,507-17 ft.; shu down for orders.
Bu-Vi-Bar's No. 1 Kirkpatrick, NE SW SW Sec. 12-15-1w. Drilling 4,955 ft.

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w ..... Spudded and shut down.

MUSKOGEE COUNTY

Finefield and others' No. 1 Jobe, NE cor. NW SE Sec. 12-15-18 ..... Drilling 1,665 ft.
J. R. Perks' No. 1 Benge, CWL NE NW Sec. 13-15-19 .... Dry and abandoned 1,415 ft.
Elk Drilling Co.'s No. 1 Jones, SW cor. SW Sec. 34-13-17 ..... Spudded and shut down.
L. T. Haney's No. 1 Mitchell, SE cor. NW SE Sec. 33-13-18 ..... Cleaning out 1,700 ft.
Rolestone and others' No. 1 Hixon, CNL SE NE Sec. 1-13-19 ..... Drilling in lime 2,190 ft.
J. L. Slusher's No. 1 Johnson, NE cor. SW NW Sec. 20-15-20 ..... Machine.

HUGHES COUNTY

W. J. Monahaim's No. 1 Pusby, C NW NE Sec. 14-4-9 .... Location.
Noble Oil & Gas Co.'s No. 1 Wickett, SE cor. SE Sec. 30-5-9 ..... Sand 1,935-50 dry and drilling deeper.

(Continued on Page 116)

Carter County

Humble Oil & Refining Co. is building the rig for No. 4 Ratliff, NW cor. NE SW, Section 20-1s-3w. Sinclair Oil & Gas Co. and Gypsy Oil Co's No. 2 Morris, SE cor. NE, Section 29-2s-3w, is drilling at 500 feet.

Magnolia Petroleum Co.'s No. 2 Gabrel, SE cor. NW SW, Section 23-1s-3w, has been completed for 75 bbls. in sands at 2,461-2,760 feet. No. 1 Brooks, SW cor. NW NE, Section 11-2s-3w, is making 40 bbls. from sands at 4,655-65 and 4,665-67 feet.

Creek County

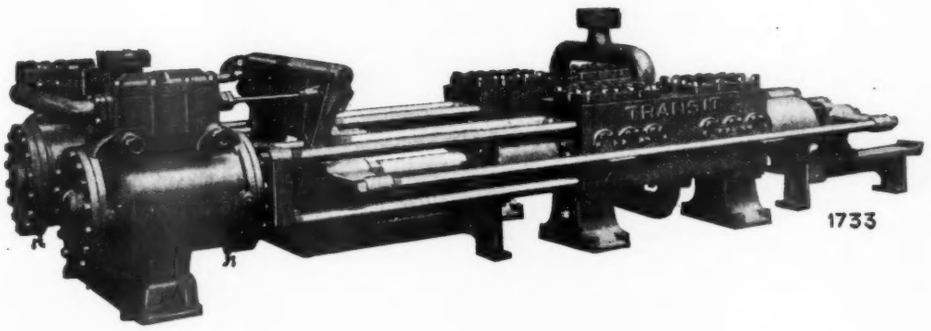
W. E. Holmes and others moved the rig out for No. 1 Halsey, NW cor. SE, Section 28-19-9. Stebbins Oil & Gas Co. made location for No. 1 Mosquito, NW cor. SW NE, Section 36-19-9. J. H. Markham made location for No. 6 Beesley, SE cor. NW, Section 20-17-7, Drumright Pool. C. G. Tibbens Oil Co.'s No. 1 Tiger, SW cor. SE, Section 27-15-8, is drilling at 1,860 feet. The machine is on the ground for No. 1 Carmen, SW cor. NW, Section 29-15-9. J. J. Shock Oil & Gas Co. has built the rig for No. 1 Harjo, NE cor. NW NE, Section 26-14-10. McMann Oil Co. has the rig up for No 1 Samples, NE cor. SE NE, Section 35-20-8. Wilson and others moved the machine out for No. 1 McNac, NE cor. SW, Section 25-17-8. The Prairie Oil & Gas Co. made location for No. 1 Stewart, NE cor. NW SW, Section 25-15-7.

Murry Oil Co. and others' No. 1 Murrell, SW cor. Section 8-19-9, is dry and abandoned at 2,989 feet in Wilcox sand. Gled Oil Co.'s No. 1-A West, NE cor. SW NW, Section 17-18-9, an old well deepened to 3,455 feet, is dry and abandoned. Pensey Oil Co.'s No. 3 Cain, CWL NE NE, Section 18-17-7, was deepened to 2,992 feet and abandoned. Jackson & Wise's No. 3 Thomas, SW cor NW, Section 13-17-10, is dry and abandoned at 1,926 feet.

Kay County

McDorman and others' No. 1 Campbell, SE cor. SW, Section 32-29-1w, is spudding for shallow gas. Carter Oil Co. and Ona Oil Co.'s No. 1 S. Johnson, C SE NE, Section 18-29-1, is a machine rigging up to drill for gas. Martin and others moved a machine out to drill for gas in C NW NW, Section 9-27-1. C. A. Leonard and others' No. 1 Buessing.

The Wise Cracker



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CWL E half NE SE, Section 20-27-1, is spudding at 60 feet.

Farmers Benefit Oil & Gas Co.'s No. 1 Nichols, NE cor. SW, Section 14-28-1w, is dry and abandoned at 890 feet. John Goins and others' No. 1 Bryn, C E half SW NW, Section 7-28-1, is making 80,000 feet of gas from sand at 755-70 feet. Argabright Oil Co.'s No. 1 Treadway, CEL NW NW, Section 11-27-1w, is dry and abandoned at 665 feet. Wentz Oil Corp.'s No. 1 Williams, NE cor. SE NE, Section 7-27-2, has been abandoned at 554 feet. Blackwell Oil & Gas Co.'s No. 2 Heighley, C SE NE, Section 29-25-1w, is dry and abandoned at 1,500 feet.

Muskogee County

Jolly Ogg Oil Co.'s No. 1 Serrell, NE cor. SE NE, Section 21-15-15, is drilling deeper at 2,140 feet. Shaffer & Heflin's No. 1 Robison, SE cor. Section 36-15-18, is drilling at 300 feet. O. R. Tautenhahn's No. 1-A Callahan, SE cor. NE SE, Section 3-14-18, is rigging. J. A. Barbre and others' No. 1 Drake, C NW NE, Section 12-14-18, is drilling at 90 feet.

J. A. Evans and others moved a machine out for No. 1 Thompson, SW cor. NW SW, Section 2-14-19. E. H. Dewell and others' No. 1 Ballard, SE cor. SW, Section 3-14-19, is drilling at 30 feet. H. C. Becker and others' No. 2 Kelley, NE cor. NW SE NE, Section 5-14-19, is drilling at 175 feet. Crippy and others' No. 1 Cobb, NE cor. NW SW, Section 6-14-19, Muskogee Townsite Pool, is spudding. Olean Petroleum Co.'s No. 2, Lot 36, Block 16, SE cor. NE SW, Section 6-14-19, is rigging up for a Wilcox test. J. A. Staley and others' No. 3 McDaniel, NW cor. SE SE, Section 6-14-19, is drilling at 100 feet. Hillcrest Oil Co.'s No. 1-A Kell, NE cor. NW, Section 7-14-19, is drilling at 725 feet. J. S. Routt and others' No. 1 Kelley, SW cor. NE NW, Section 8-14-19, is drilling at 200 feet. A. Tillman's No. 2 Jackson, NW cor. NE SW, Section 8-14-19, is drilling at 450 feet.

J. Boyle and others' No. 6 Barnett, CNL NE SE, Section 8-15-15, is making 125 bbls. from sand at 1,621-23½ feet. Bryan & Emery's No. 1 Barnett, CSL SE NE, Section 8-15-15, was completed for 150 bbls. in sand at 1,619-22½ feet. W. B. Pine and others' No. 1 Simmons, NW cor. NE NW, Section 9-15-15, is dry and abandoned at 1,727 feet. J. L. Slusher's No. 1 Fewel, CWL SW NW, Section 6-14-17, is dry and abandoned at 1,783 feet. Ark-Add Oil Co.'s No. 4, Lot 34, Block 16, Muskogee Townsite, SE cor. NE SW, Section 6-14-19, has been completed for 40 bbls in sand at 516-35 feet. O. F. Butler's No. 1, Lot 48, Block 3, SE cor. SW NW, Section 6-14-19, is dry and abandoned at 780 feet.

C. A. Lovelace, trustee's No. 1, Lot 11, Block 16, SE cor. NE SW, Section 6-14-19, made 90 bbls. from sand at 514-26 feet. W. J. Metzger and others' No. 7 Crittenden, NW cor. SW NE SE, Section 6-14-19, is dry and abandoned at 828 feet. Olean Petroleum Co.'s No. 1, Lot 20, Block 16, SE cor. NE SW, Section 6-14-19, made a 40-bbl. well in sand at 514-26 feet. Ragland and others' No 2, 105-28, Block 16, SW cor. SE NE SW, Section 6-14-19, was completed for 30 bbls. in sand at 508-28 feet. S. Threlkeld's No. 1 Cobb, NW cor. SW, Section 6-14-19, is dry and abandoned at 893 feet. F. Walters' No. 1, Lot 15, Block 16, CSL SE NE SW, Section 6-14-19, was completed for 40 bbls. in sand at 514-28 feet. Sioux Oil Co.'s No. 2 Jordan, NE cor. SE SE, Section 14-13-18, is making 3,000,000 feet of gas in sand at 540-55 feet.

Caddo County

Caddo Oil Co.'s No. 3 Cutshall, NW cor. NE SE, Section 5-5-9w, is cementing surface pipe.

Jefferson County

Skelly Oil Co. is rigging up rotary tools at No. 3 Ryan, NE cor. SE SE, Section 23-6s-6w.

Grady County

Carter Oil Co. has erected the rig for No. 6 McCaughtry, NW cor. NE NW NW, Section 26-5-8w. Oklahoma Gas Utilities Co.'s No. 3 Woods, SE cor. NE NW, Section 2-4-8w, is drilling at 400 feet. Commerce Development Co. made location for No. 2 Pond, SE cor. NW SW, Section 13-4-8w. Location was also made for No. 2 Parks, NW cor. SW SW, Section 13-4-8w.

Meridian Gas Co.'s No. 1 Farwell, SW cor. NE SE, Section 23-5-8w, has been shut in for 25,000,000 feet of gas after cementing pipe at 2,040 feet and drilling in to 2,060 feet. Kipp and others' No. 3 McCaughtry, SE cor. NW, Section 35-5-8w, cemented 8-inch casing at 2,035 feet, drilled to 2,340 feet and is good for 26,000,000 feet of gas. Magnolia Petroleum Co.'s No. 6 Smith, SW cor. NW NE, Section 35-5-8w, has been completed for 25,000,000 feet of gas at 2,379 feet. Commerce Development Co.'s No. 1 Pond, NE cor. NW SW, Section 13-4-8w, is making 25,000,000 feet of gas at 2,365 feet. Gypsy Oil Co.'s No. 6 Kayser, SE cor. SW NW, Section 16-3-5w, has been abandoned at 2,595 feet. Carter Oil Co.'s No. 4 M. Kerans, NE cor. NW SE, Section 21-3-5w, is flowing 250 bbls. from sand at 1,759-65 feet.

Okfuskee County

Edgewood Oil Co.'s No. 1 McKellop, NW cor. Section 5-13-10, is dry and abandoned at 3,512 feet. E. L. Robinson's No. 2 Berryhill, NE cor. SW, Section 35-11-9, has been completed for 15 bbls. in sand at 1,466-76 feet. Schermerhorn Oil Co.'s No. 1 Norris, C SE NW, Section 20-10-9, is good for 4,000,000 feet of gas in the Gilcrease sand at 3,070-3,181 feet. Future Development Co.'s No. 1 Sango, C NW SE, Section 20-10-9, has been shut in for 7,000,000 feet of gas from sand at 3,085-3,100 feet.

Okmulgee County

L. C. Wheeler has the rig up for No. 1 Throckmorton, NE cor. NW, Section 32-15-13. L. Nourse and others' No. 1-A Rowe, SE cor. NE NW, Section 20-15-14, is rigging up. F. D. Misener's No. 1 Colbert, SE cor. NW, Section 14-14-14, is drilling at 300 feet. A. G. Hazlett and others moved a machine out for No. 3 Fields, CWL NW NE, Section 33-13-13. Transcontinental Oil Co. has a machine at the location for No. 1 Peters, CNL NW SE, Section 34-16-14.

J. E. Wallace's No. 8 Colbert, NW cor. NE SE, Section 14-14-14, is making 12 bbls. from sand at 1,703-42 feet. A. G. Hazlett's No. 5 B. Jones, NW cor. NE NW, Section 33-13-13, has been shut in for 13,000,000 feet of gas in sand at 1,376-1,493 feet. B. Morgan's No. 2 R. Grayson, CNL NE SW, Section 14-11-13, has been abandoned at 1,570 feet.

Osage County

W. J. Knupp's No. 7 CWL E half SW, Section 36-27-11, is rigging up to deepen from 1,595 feet. Smith Leahy and others' No. 1, NE cor. SE, Section 9-25-9, is a machine rigging up. Link Oil Co. has a machine at the location for No. 1, CNL SE, Section 34-25-9. Indian Territory Illuminating Oil Co.'s No. 5, SW cor. NW NW, Section 36-25-9, is an old well rigging up to deepen from 1,702 feet. Peters and others' No. 1, NW cor. SE, Section 32-24-9, is an old well drilling deeper at 1,280 feet.

L. C. Duffield's No. 4, NW cor. SW NW, Section 35-29-10, has been deepened from 1,100 feet to 1,762 feet and is making 7 bbls. Phillips Petroleum Co.'s No. 8, SE cor. NW SE, Section 17-27-6, made 450 bbls. from Burbank sand 2,905-70 feet and after the shot increased to 600 bbls.

Phillips Petroleum Co.'s No. 9, NE cor. SW SE, Section 17-27-6, Burbank Pool, had Burbank sand at 2,892-2,965 feet and flowed 300 bbls. after the shot. The Prairie Oil & Gas Co.'s No. 5, CSL NW, Section 21-27-6, made 755 bbls. from sand at 2,867-2,935 feet. Kewanee Oil & Gas Co.'s No. 12, NE cor. SW NW, Section 34-27-6, has been completed in Burbank sand at 2,862-2,925 feet and swabbed 14 bbls.

Pawnee County

Peter Adamson, Jr.'s, No. 1-A, SE cor. NW, Section 25-21-8, is drilling at 500 feet. Grives and others moved a machine out for No. 1 Blackmer, NE cor. SE NE, Section 22-20-9. Wallace & Fisher's No. 3 Weeks, NW cor. NE NE SE, Section 30-20-9, is cleaning out at 1,116 feet in Layton sand topped at 1,084 feet.

Payne County

Pure Oil Co.'s No. 2 Ramsey, SW cor. NE SE, Section 7-18-4, is dry and abandoned at 4,458 feet.

Pontotoc County

Westheimer & Daube's No. 1 Milner, SE cor. Section 8-5-8, Allen Pool, was deepened from 2,428 feet to 2,466 feet and after plugging back 6 feet made 310 bbls. Homaokla Oil Co.'s No. 8 McCall, NW cor. NE SE, Section 17-5-8, is dry and abandoned at 2,880 feet. Bowles and others' No. 1 Rayborn, SW cor. SE, Section 35-4-6, has been abandoned at 1,415 feet. W. C. Hughes and others' No. 1 Gann, SE cor. NW, Section 15-4-7, has been shut in for 3,000,000 feet of gas in sand at 1,107-10 feet.

Pottawatomie County

Superior Oil Co.'s No. 1 Cloude, SW cor. NW NW, Section 24-7-4, St. Louis Pool, is rigging up to deepen from 3,775 feet. Continental Oil Co.'s No. 4 Neghnguit, SE cor. NE NW, Section 19-7-4, Pearson Pool, has been completed for 205 bbls. in Hunton lime at 3,766-3,850 feet. Pierce Oil Corp.'s No. 1 Sanders, NW

(Continued on Page 97)

SOME GOOD KANSAS COMPLETIONS; ODD LOCATION IN SUMNER COUNTY

By J. L. Dwyer
Staff Correspondent, Kansas Fields.

A few good wells, and the announcement of an unusual location were the only bits of interesting news from the fields last week. The Darby Petroleum Co.'s No 7 Fankhouser, NE cor. SW SW Section 24-22-12, is reported good for 200 bbls. per day on the pump after a shot of 180 quarts in sand at 1,628-79 feet.

In the Hilltop section of Greenwood County, the Skelly Oil Co. apparently has an extension in No. 1 Lea, NW cor. SE NE Section 32-22-13, which was shot with 80 quarts in sand at 1,796-1,829 feet, and is reported good for 50 bbls.

In the Lost Springs district of Marion County, Reynolds and others have a good well in No. 1 Zinn, NW cor. NE NE Section 22-17-4, which is good for 200 bbls. daily from chat at 2,392-2,435 feet. This well is making its production on the pump. In the same territory, the White Eagle Oil & Refining Co. and others' No. 1 James, SW cor. NE Section 26-17-4, has showed that production may be expected 1½ miles southeast of the townsite pool. The White Eagle well is swabbing 125 bbls. daily from chat 2,355-82 feet, and will probably be drilled deeper, as it has only penetrated 27 feet of chat.

A location to be drilled by a group of Wichita men will scarcely have sufficient room to erect the derrick, for it is to be built on a corner of a lease which was obtained by the road commissioners of Sumner County. The piece of land is only about 40 feet square.

Butler County

Rogers and others' No. 17 Drum Bitler, SW cor. SE NE, Section 20-26-8, is drilling at 1,550 feet. Richmond Drilling Co.'s No. 2 Brissie, NE cor. NW SE, Section 8-27-6, is a 45-bbl. well in sand at 3,138-48 feet.

Cowley County

T. B. Slick and others' No. 1 Dibbens "A," NW cor. NE, Section 22-32-4, is rigging. Watchorn Oil & Gas Co.'s No. 2 Esch, SE cor. SW SW, Section 33-33-6, is spudding.

Tatlock and others' No. 1 Elliott, NW cor. SE, Section 4-31-5, is dry and abandoned at 3,500 feet. Knox Drilling Co.'s No. 1 Mattison, Lot 7, Block 44, Winfield Townsite, Section 22-32-4, has been completed for 1,000,000 feet of gas in sand at 2,932-75 feet. The Prairie Oil & Gas Co.'s No. 1 Graham, SE cor. SW, Section 10-32-4, is dry and abandoned at 3,322 feet.

Greenwood County

Braden & McClure moved a machine out for No. 2 Povenmire, SE cor. NE NE, Section 22-22-13. Sheedy and others made location for No. 1 Green, SW cor. Section 1-23-9. Mid-Continent Petroleum Corp. has a machine at the location for No. 1 Scott, SW cor. NE, Section 7-24-12. Mid-Kansas Oil & Gas Co.'s No. 1 Adams, NE cor. SE, Section 15-27-13, is drilling at 150 feet.

Henderson & Holdren's No. 2 Gaffney, NW cor. NE, Section 7-24-11, was shot with 30 quarts in sand at 1,854-71 feet and made 25 bbls. Davis and others' No. 1 Olson, NE cor. SE, Section 6-25-9, is dry and abandoned at 2,340 feet.

Marion County

Johnson and others made location for No. 1 McNicoll, SW cor. NW NE, Section 15-17-4. Phillips Petroleum Co.'s No. 2 Reznicek, SW cor. NW SW, Sec-

(Continued on Page 136)

KANSAS WILDCATS

BARBER COUNTY

Barbara Oil Co.'s No. 1 Blunk, C NE NW Sec. 20-34-13w.. Drlg., 2,975 ft.
G. W. Basom's No. 1 Grant, SW cor. SE SW, Sec. 13-31-3 ..... Drlg., 789 ft.
Otstot et als' No. 1 Barlow, SE cor. SE Sec. 22-23-3w.... S.D., 1,860 ft.
Rolland et als' No. 1 Pickens, NE cor. NW NE, Sec. 27-30-1w ..... Drlg., 3,210 ft.
J. K. D. Shaffer's No. 1 Carter, C SE SE Sec. 2-33-13w.. Fish., 3,980 ft.
J. K. D. Shaffer's No. 1 Boggs, SW cor. NE SW Sec. 19-33-12w ..... Drlg., 5,320 ft.
Skelly Oil Co. et als' No. 1 Winter, C E half Sec. 17-31-12w ..... C.O., 3,550 ft; ready to d.d.

BARTON COUNTY

Everett & Wiley's No. 1 Ward, NW cor. SW, Sec. 12-20-13w ..... S.D., 3,346 ft.
Huffine et als' No. 1 Smith, NE cor. SE NW, Sec. 17-19-11w ..... S.D., 5,130 ft.
McJilton et als' No. 1 Evanston, SE cor. NW, Sec. 34-17-11w ..... Rig.

BUTLER COUNTY

Cress & Frank's No. 1 Bryson, NE cor. NE, Sec. 26-27-5.. Drlg., 3,020 ft.
Derby Oil Co.'s No. 1 Bughman, C SW SW Sec. 21-18-2w Rig.
Empire G. & F. Co.'s No. 1 Semisch, NW cor. SE NW, Sec. 4-33-7 ..... Dry and abd., 2,732 ft.
LaRobb et als' No. 1 Bronsenger, NE cor. SW, Sec. 24-27-3 ..... Rig.
Mid-Kansas O. & G. Co. et als' No. 1 Harsh, NE cor. SW, Sec. 5-24-8 ..... Rig.
Joe Ligget's No. 1 Travender, NW cor. SE Sec. 24-23-6.. Drlg., 2,530 ft.
White Eagle O. & R. Co.'s No. 1 Dixon, NE cor. SE SW, Sec. 1-27-6 ..... Hole full wtr., 3,089-3,105 ft; S.D.
H. F. Wilcox O. & G. Co.'s No. 1 Littell, NE cor. SE NW, Sec. 21-29-4 ..... Collapsed csg., 1,463 ft; S.D.

CHASE COUNTY

Griener & Fowler's No. 1 Carson, NE cor. NE, Sec. 9-21-7 ..... S.D., 2,025 ft.

CLARK COUNTY

Walker & Warner's No. 1 Mitchell, SW cor. NE, Sec. 16-31-23w ..... S.D., 600 ft.

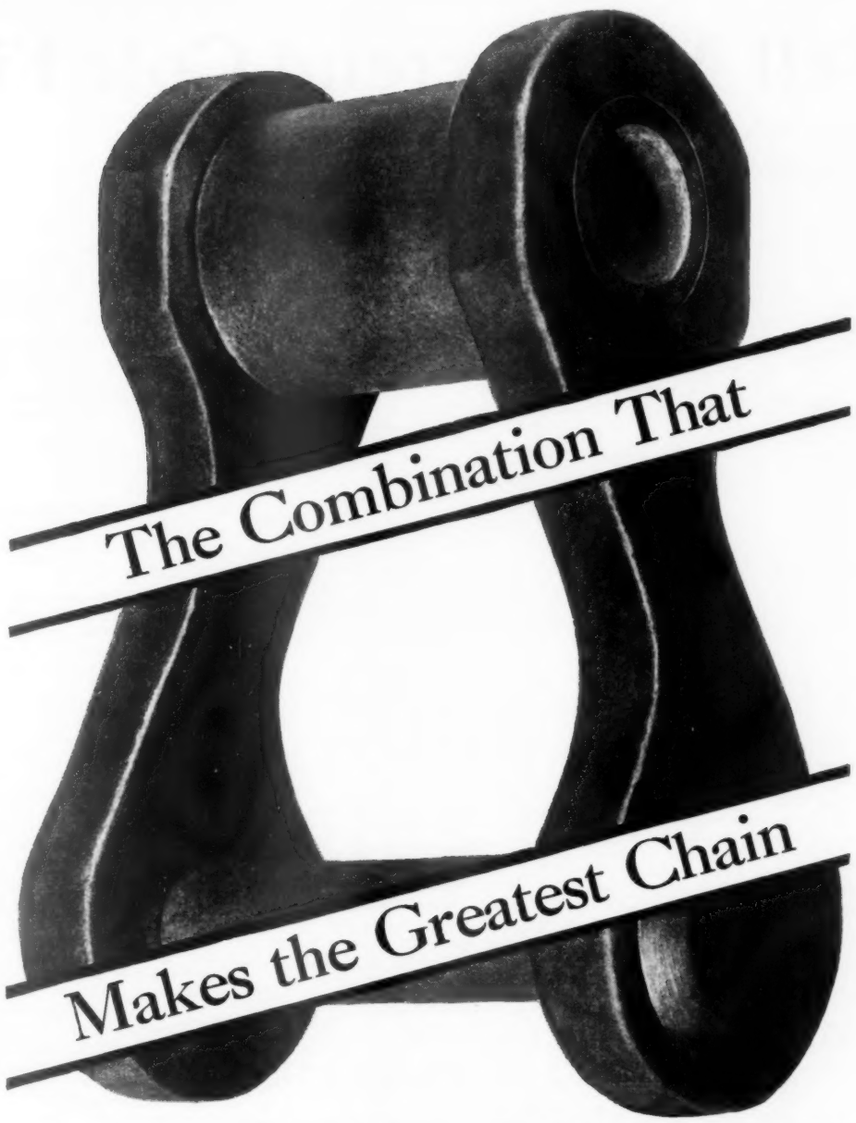
CLOUD COUNTY

Concordia P. & R. Co.'s No. 1 Murdock, SE cor. SE, Sec. 6-6-4w ..... Fish., 3,590 ft.

COWLEY COUNTY

Allison & Fitzwilliams' No. 1 Shapland, NE cor. NW SE, Sec. 20-30-6 ..... S.D., 790 ft.
Barnadall Oil Co.'s No. 1 Russell, NE cor. NW SE, Sec. 15-33-4 ..... Drlg., 2,080 ft.
Derby Oil Co.'s No. 1 Seaman, NE cor. SE NE, Sec. 32-30-3 ..... Drlg., 2,802 ft.
John Herron et als' No. 1 Marshall, SW cor. NE, Sec. 36-30-6 ..... S.D., 1,645 ft.

(Continued on Page 115)



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Another that it's the ground pins and bushings:
A third that it's the strong sidebars:
A fourth that it's the seamless bushings and rollers:
A fifth says it's the unit link:
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DEEPWELL
CHABELCO

Magnolia Well May Extend Cole Field

This Company's No. 1 Valdez, Now Starting to Drill, Is 800 Feet North and 400 Feet East of the Nearest Producer

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Apr. 23.—Magnolia Petroleum Co. is starting to drill a well in the southwest corner of Survey 754 in Webb County which adjoins Survey 412 on the north and the location is 800 feet north and 400 feet east of the nearest producer in the new Cole oil field. It is 700 feet east and 300 feet north of Cole's No. 56 which is on the sand with casing set and about ready to drill in. Magnolia has a gas well in the southeast end of the new area and aside from it this well, the No. 1 Valdez, is the first to be drilled in it.

Cole Petroleum Co. has three rigs running day and night. Cole Petroleum Co. and Magnolia Petroleum Co. own all the acreage that is not owned by individuals directly connected with Cole Petroleum Co. Otherwise there would probably be 20 rigs in the field at this time. A twin Cooper air compressor has been purchased by Cole Petroleum Co. and the six producing oil wells in the field will be put on air and when so equipped it is believed that the production of the field will be about 1,500 bbls. a day of 21 gravity oil.

No. 51, which is in the northwest corner of Block 5, Survey 412, sanded up and when the tubing was pulled it was standing 1,400 feet in oil. It sanded up again and is to go on the pump and is standing now 2,000 feet in oil. It flowed an average of 100 bbls. a day for the last two months. Nos. 53 and 55 are now flowing about 100 bbls. a day each and No. 54 is making too much gas to advantage, but when the gas pressure is down a little will probably produce better. This new field is now 2,000 feet long east and west and about 1,200 feet wide north and south. Nos. 56 and 57 at the west end of the field are on the sand and with casing set and should be in early this week.

Magnolia's well, the No. 1 Valdez, in the southwest corner of Survey 754, and which is now rigging up, will be an interesting test since if it makes a producer it will give the field a big extension. Average daily production of the Mirando pools for March was 6,125 bbls., of which 169 bbls. daily was credited to the new Cole Field wells. With the month of April over half gone the total of all the pools should reflect an increase due to the Cole wells, but for the month of May may be expected to reflect a much greater increase. Cole's No. 57 was spudded in April 3 and the No. 56 spudded in April 5 are both on the sand and with casing set last week and now ready to drill in.

New Kohler Field

Humble Oil & Refining Co, after wrestling with the No. 7 Kohler in the new Kohler Field in western Duval County, north of the Cole gas field 10 miles, has completed a 10-bbl. well at 2,807 feet total depth. Location has been made for the No. 8. The field thus far consists of three wells counting the No. 7. The other two wells during March at the same depth made a total daily average of 47 bbls. Considering the depth the field therefore thus far doesn't indicate that it is worth considering yet as a factor in the present overproduction.

Driscoll Pool

Edward St. Albans added a dry hole to the Driscoll Pool last week when he bailed his No. 1 Hyatt and got salt water. It is really wildcat, being more than a mile north and a little east of the Driscoll discovery well. The field thus far consists of only two wells, both gassers, and Driscoll's No. 11, which tested through a drill stem tester two weeks ago and was reported a big gasser, has set casing but has not been drilled in.

Gas Overproduction

There is claimed to be a gas overproduction in Southwest Texas now that is as bad as the overproduction of oil nationally. Royalty owners are fretting because their gas is not being used. A firm of Tulsa geologists reported that the Southern Gas Co. supply of natural gas would last the company, provided there were no up curves in the consumption line, a period of 24 years. In the Laredo district there are some big gas areas that are not being utilized at this time at all and drilling has very materially lessened in the White Point and Refugio Fields.

San Antonio District

Proven fields in the southwest Texas territory outside of Laredo were almost devoid of incident the past week. In the Luling Field Max Koenig completed his No. 6 Tiller good for 100 bbls. of oil daily and it looks like Pat Armstrong and others' No. 1 Haldeman on the south edge of the field was going to have a better well than he thought at first. It is not fully equipped as yet. He has bought the Crenshaw 37-acre lease south of his 10-acre Hardeman tract and an additional four acres off the Hardeman tract. The United North & South's two deep tests, still in schist from about 4,700 feet, are drilling the No. 1 Kelly at 7,590 feet and the No. 2 Tiller at 7,230 feet.

In the Dale Field in Caldwell County, William F. Morgan has hit what looks like pay at 1,850 feet in his No. 2 Osteen and at more than 100 feet higher than in the other wells of the field.

In the Rockdale shallow field in Milam County, The Texas Company has bought the oil and gas lease on everything below 1,500 feet on 235 acres. Lately there has been a noticeable interest in the Somerset Field in Bexar County, indicating a desire to take a chance on there being deep oil there. Both the Somerset and Rockdale Fields are producing from the Taylor marl. No deals have been closed in Somerset as yet. In the Rockdale deal, The Texas Company paid Oxsheer Smith $13,050 for the oil and gas lease on production below 1,500 feet on 265 acres out of the T. J. Chambers Survey in the Minerva end of the Rockdale Minerva Field and the oil and gas lease on all production was purchased by Oxsheer Smith from T. D. Roundtree last December for $22,900

COMPLETIONS

Caldwell County

The Texas Company's No. 4 Osteen, J. Gilbert Survey, Dale Field, at 2,206 feet total depth, is 75-bbl. well.

Joseph Bruner and associates' No. 1 Davis, A. Floyd Survey, 1 mile north of Luling, at 2,688 feet, last gauges, show well making head to 15 to 18 bbls. every 12 to 13 hours. Well will be equipped with Kelly flowing device.

M. K. Koening's No. 6 Tiller, John Henry Survey, Luling Field, at 2,133 feet, made initial production of 100 bbls.

Duval County

Magnolia Petroleum Co.'s No. 4 S. Benavides, Block 3, O'Hern & Seacord Subdivision, southern end of the Cole Field, at 1,640 feet, is gasser gauging 20,000,000 feet of gas.

Humble Oil & Refining Co's No. 7 Kohler, Survey 165, Humble-Reiter-Foster Field, at 2,807 feet, is 10-bbl. well.

Edwards County

Devil's River Oil & Gas Co.'s No. 2 Turne, Section 167, C.C.S.D.&R.G.N.G. Survey, has been abandoned at 443 feet with shallow oil showing at 440 feet.

Guadalupe County

O. W. Killam's No. 1 Lynch, M. Miller Survey, has been abandoned dry at 2,300 feet.

Gonzales County

W. D. Flynn's No 1 Wilhausen, S. Bateman Survey, 12 miles west of Yoakum, has been abandoned dry at 2,600 feet.

L. L. Jones and others' No. 1 Campbell, Moore & Bridges Survey, abandoned dry at 1,980 feet.

L. P. Unkel's No. 3 W. W. Johnson, C. H. Jaeger Survey, abandoned at 1,500 feet.

Jim Hogg County

Moody Oil Corp.'s No. 14 Palacious, Survey 291, Block 11, Randado Field, at 1,275-76 feet, is 60-bbl. well.

Frank Koury's No. 1 Jones Weil, Survey 81, Block 9, Randado Field, at 1,301 feet, total depth, is 5-bbl well.

Alworth-Stevens-Hild's No. 11 M. Garza, Survey 39, Block 10, Alworth Field, location only, has been abandoned.

Kleberg County

Humble Oil & Refining Co.'s No. 5 Kleberg, Section 40, Block 8, 3,012 feet total depth, plugged back to around 2,440 feet and shot, is gasser estimated at 35,000,000 feet with 1,100 pounds rock pressure.

Live Oak County

Live Oak Gas Co. (Simmons Oil Co. formerly) No. 1 Frank Church, Oakville gas field, has been completed a gas well at about 250 feet, estimated at 2,000,000 to 4,000,000 feet.

Houston Gulf Gas Co.'s No. 2 Lark, E. W. B. Scrugham Survey, tested salt water around 1,400 to 1,500 feet. Exact depth to be reported later.

Medina County

R. P. O'Brien's No. 1 Nixon, Survey 531, at 1,080 feet, was put on the pump for two days and the second day pumped 8 bbls.

Refugio County

Houston Oil Co.'s No. 11 W. J. J. Heard, Refugio gas field, sand at 3,434-42 feet, has been completed a 30,000,000-foot gasser.

Houston Gulf Gas Co.'s No. 1 J. T. Vance, center Lot 1, Block 7, in the same field, at 3,800 feet approximate depth. Christmas tree put on and mud left in hole. Well not tested but is probably big gasser in new sand. No. 2 Shelly, same field, at 3,307 feet, is gasser of 30,000,000 feet.

Starr County

The Texas Company's No. 1-A V. Guerra, Porcion 68, Block 92, wildcat well at 210 feet, is a gasser of 1,750,000 feet with 85 pounds rock pressure.

San Patricio County

Saxet Oil Co.'s No. 1 Bennett, White Point Field, Roos Survey, Block 9, location, has been abandoned and leases forfeited.

NEW LOCATIONS MADE

Schimmel Production Corp.'s No. 25 Koehler, Survey 265, Somerset Field, Bexar County, is location 610 feet southwest of No. 24; No. 3 Tick, same survey and field, is location 620 feet west of the No. 2.

George Ginter's No. 1 Hermann, Block 15, J. Montes Survey, Somerset Field.

(Continued on Page 127)

GAS STRUCK IN STARR COUNTY AFTER YEARS OF WILDCATTING

By B. D. Stevenson

SAN ANTONIO, Tex., Apr. 23.—The Texas Company has a 1,750,000-foot gas well with rock pressure of 85 pounds in its No. 1-A V. Guerra in Starr County at a depth of 210 feet in Block 92, Porcion 68, the well being located 150 feet from the south and east lines of the block. It is the first fruits of two or three years of various companies wildcatting in Starr County and is located almost due north of the old city of Roma.

The Texas Company is drilling the No. 1 M. Guerra in Block 91 of the same survey and is down 2,680 feet in it with a showing of gas. Early in 1926 The Texas Company bought a half interest in a block of many thousands of acres from R. E. Brooks, Jr., of Houston and it and the Southern Exploration Co. have started to explore the block. Gas from the No. 1-A V. Guerra will doubtless supply the fuel for additional wildcatting since the territory is one far removed from good roads and transportation.

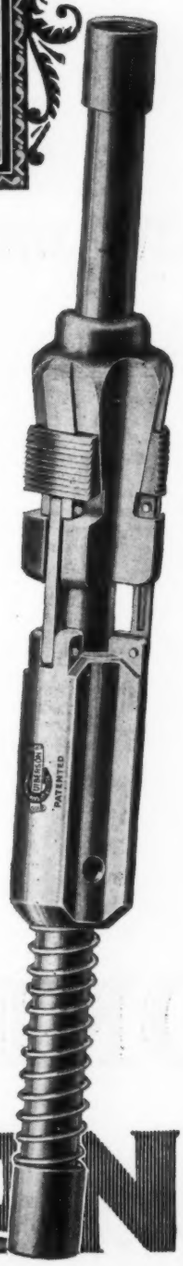
There were 15 new locations announced in Southwest Texas the past week, some of which were in proven territory, but showing rather a tendency to increase in activity. M. O. Rayor is the first to get a derrick up and start moving into the new Bruner Field in Caldwell County, his No. 1 August being 3,000 feet northwest of the Bruner No. 1 Davis, which is the discovery well. The discovery well with total depth of 2,688 feet was heading about twice a day and making about 15 bbls. at a head but during the past week has shortened the intervals and late last week was heading about every half hour with small heads and with larger heads about twice daily making about the same amount of oil.

It was announced that a flowing device would be put in but the packer with which the tubing was set is holding now and the flow is all through the tubing. It has been decided not to disturb the well and at least for the present it will not be shot. Oil men and geologists have been out to look the new well over, but the surface tells almost nothing as to the geology and the only thing anyone can see is the oil coming out of the ground and the cores taken from the bottom of the hole that show it to be Austin formation but sandy rather than chalk as the Austin usually is in this territory.

National Oil Co. at 2,542 feet in the No. 1 Sullivan in western San Patricio County on a block of acreage which was worked with the seismograph, late last week had gone through 153 feet of shale and gumbo alternating and was in lime rock, conditions that are very similar to those encountered just above the pay in the White Point Field and in the Ed Leach No. 1 Collins farther to the west. Leach found these formations a little shallower and White Point a little deeper accounting for the dip towards the Gulf. Another 50 or 100 feet drilling to find what is on the other side of the lime rock will be interesting.

One other wildcat is at an interesting depth. The Blue Ribbon Oil & Gas Co.'s No. 1 Edwards in northern Frio County due south of the Adams gas field and Ina oil field in Medina at 1,825 feet is in formations similar to those above the 1,000-foot production in the two

(Continued on Page 131)



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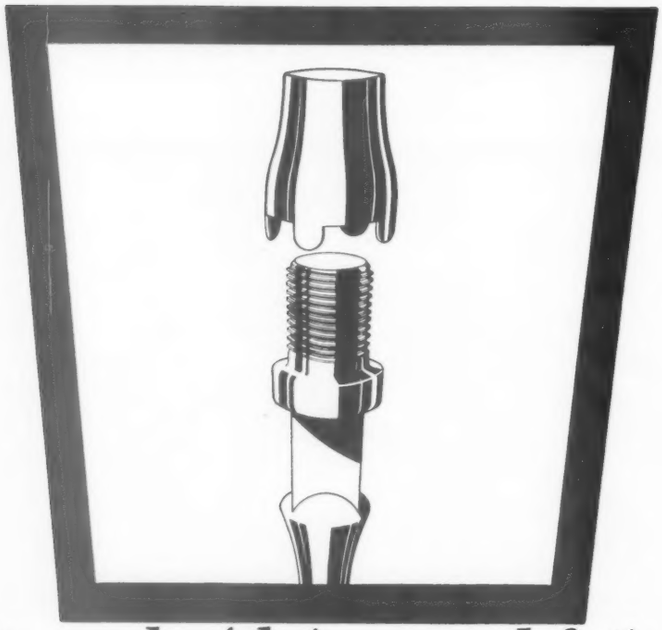

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By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas.

SHREVEPORT, La., Apr. 23.—Considerable disappointment is felt over the outcome of Magnolia Petroleum Co.'s No. 1 G. W. Cole in NE NE cor. NW NE Section 27-21-10, 1¼ miles south of Ohio Oil Co.'s Trinity sand producer in Section 15-21-10, Cotton Valley and the first completion in that horizon since the Ohio company brought in its discovery well and a big gasser in the same pay. Completed at a total depth of 4,729 feet at which it is figured 7 feet deeper, subsea elevation, than the Ohio company's discovery well, it gauged 4,820,000 feet of gas with no signs of oil or water at 1,045 pounds initial rock pressure. The latter, however, is thought to be in error with 1,500 pounds closer to the actual pressure. Twenty joints of 5½-inch liner were set through hard sand and lime, 13 joints of it perforated scattered through the string and the well bailed in Wednesday. After being gauged it was shut in with the intention of opening it from time to time during the next two or three days to determine whether it would be improved by short intervals of blowing, but Saturday the experiment had not produced the hoped-for results.

The well is a half mile west of Woodley Petroleum Co.'s No. 1 L. C. Cox in Section 23-21-10, which was completed last month as a 4,000,000-foot gas well at 4,590 feet after it had plugged back from 4,737 feet, where it showed for 50 bbls. of 50-gravity oil with 3,000,000 feet of gas and 200 bbls. salt water. Several theories or explanations for it turning out as it has have been offered, among which are that in the absence of steel line measurements total depths may not be as shown; that the producing horizon undulates sharply and that the bottom of the hole may be on the apex of one of these "waves," and that the producing formation is so tight it will have to be shot. It is understood, meanwhile, that Magnolia will deepen the hole a few feet. The same company's No. 1 D. G. Cox, Section 22-21-10, approximately a half mile south of the discovery well, will be the next deep sand completion in Cotton Valley as it is drilling below 4,600 feet.

Storm Sweeps Smackover

Over 700 derricks in the Mooringsport district of Caddo Parish, Stephens Field, in Ouachita County, and Louann, Griffin and Smackover districts of Smackover Field, were destroyed by the tornado that swept North Louisiana and South Arkansas early Saturday morning, the most destructive of the many that have swept Smackover Field. According to a survey of the territory Sunday, the three districts of the Smackover Field bore the brunt of the property loss which will run close to $5,000,000 exclusive of replacements and loss of production while stub derricks are being built.

Fifty-two of the Smackover operators lost 707 derricks and loss of production is estimated to reach between 15,000 and 20,000 bbls. daily.

Gulf Refining Co. was hardest hit with 62 derricks down in Smackover, 10 in Stephens, and 9 on the Ferry Lake lease in Caddo. Among the other heaviest losers were Standard Oil Co., 13; Atlantic Oil & Producing Co., 18; Federal Oil Marketing Co., 25; Federal Petroleum Co., 24; Gilliland Oil Co., 25; Natural Gas & Fuel Corp., 20; Phillips Petroleum Co., 23; A. H. Ramage, 11; Roxana Petroleum Corp., 30; Simms Oil Co., 16; Humble Oil & Refining Co., 19; Lion Oil Refining Co., 37; Louisiana Oil Refining Corp., 17; Magna Production Co., 13; Magnolia Petroleum Co., 48; Marine Oil Co., 20; Ohio Oil Co., 18; Pure Oil Co., 15; J. D. Reynolds, 15; Southern Crude Oil Purchasing Co., 41; The Texas Company, 60; Sunny Jim Oil Co., 22; and Woodley Petroleum Co., 11. The other 29 operators in the list of losers lost from 1 to 10 derricks each.

The toll would have been larger but that there were steel derricks on many of the wells in the path of the storm, which appears to have been a tornado rather than a twister, which swept through the territory from west to east and turned northeast between Stephens and Lisbon Fields and missed Cartersville, Cotton Valley and North Webster Fields, Haynesville and Homer. In many cases while steel derricks were not toppled their engine room and belt houses were flattened, putting the wells out of commission but enabling resumption of operation in a day or two. This accounts for loss of production being no larger than it is.

On the other hand, Smackover Creek is rising rapidly and a repetition of the flood of a year ago is feared as one company has 18 wells off production on account of high water and Smackover Creek bottoms are crowded with wells. Production superintendents are conducting a further check preparatory to getting their wells back on production replacing wrecked derricks with steel stub derricks.

During the course of a second terrific rain and wind storm, accompanied by a severe electrical display, that struck Shreveport late Saturday afternoon, lightning struck one of the forty-two 55,000-bbl. tanks on The Texas Company's tank farm at its Ardis topping plant, destroying it and about 7,000 bbls. of distillate.

Freak Wells

After swabbing for some time Dixie Oil Co.'s No. 91 Dillon, a freak well in Section 14-21-15, Caddo Parish, will be put on the beam to pump from 2,702 feet. March 29 it came in flowing 2,270 bbls. daily of light oil at this depth but went dead two days later and swabbing has failed to start it again. Haynes Brothers' No. 1 Spell in Section 15-21-15 was put on the pump making 10 bbls. total depth 3,911 feet. It was completed last August 27 making 400 bbls. at 3,703 feet as one of the first completions to follow Haynes Brothers' No. 1 Murray in the same section which tapped a new pay in Pine Island and led to considerable deep drilling in that and adjoining sections. With the possible exception of the Murray and one or two other wells these wells, while productive, proved failures when it came to making profitable returns. Gas was quickly depleted necessitating installation of gas-air lift or pumping equipment and meanwhile completions dropped immediately, and cost of operating the wells left little with which they could pay out and show a profit. The Texas Company abandoned No. 13-B Noel in Section 14-21-15 this week as a salt water hole with a little oil at 3,979 feet. In Pine Island shallow stuff Shreveport Oil Corp. completed No. 2 Muslow, Section 32-21-15, pumping 50 bbls. from 2,127 feet.

Champagnolle Extension

Production in the Champagnolle gas district of northeastern Bossier Parish was extended southeast slightly with Arkansas Natural Gas Co.'s No. 1 Crawford in the center NW NW Section 6-22-11, estimated at 31,000,000 feet of gas, total depth 2,696 feet. Another extension in the same general direction was Delaware-Louisiana Development Co.'s No. 2 Bollinger, in Section 38-23-11, estimated at 36,000,000 feet of gas at 1,210 pounds I.R.P., total depth 3,064 feet. Northwest Louisiana Gas Co. completed No. 1 Barnett, Section 25-23-12, with 42,000,000 feet of gas, total depth 3,076 feet.

H. S. Goodwin abandoned No. 1 Mercer, Section 21-16-12, in the Elm Grove district of southwestern Bossier as a salt water hole at 1,970 feet. J. S. McCullough had better luck with No. 6 Hodges in Section 25-16-12, completing it as a 35-bbl. pumper at 1,548 feet. G. W. Wetherbee completed No. 2 Smith, Section 23-19-11, in the southern extension of Bellevue shallow pool making 250,000 feet of gas and a little salt water, total depth 396 feet.

Rudeseale and others gave up trying to get deeper production in No. 1 Meadows, Section 20-21-7, Homer district of Claiborne Parish, which they took over as a dry hole at 2,300 feet, and have abandoned the effort as a junked hole at 2,920 feet, where drill stem stuck and they pulled the derrick in trying to loosen it.

Hatcher & Evans' No. 7 fee, Section 21-19-4, Ouachita Parish, in the Monroe gas field, was completed at 2,208 feet gauging 4,000,000 feet of gas at 765 I.R.P. Imperial Oil & Gas Products Co. abandoned No. 6 Stubbs for which they had derrick up in Section 14-19-3, Ouachita Parish.

Outside of Champagnolle there was one completion in Arkansas, Phillips Petroleum Co.'s No. 1 Johnson, Section 34-15-5, on the east edge of Smackover in Ouachita County, pumping 125 bbls. clean oil from 19 feet of broken sand, total depth 1,984 feet.

Production Decline

In spite of new production from deeper sands in Cotton Valley and Champagnolle, daily average runs from the field for the Shreveport division fell off 1,215 bbls. compared with shipments last week. This week's average was 132,945 bbls. and last week it was 134,160. Louisiana runs were 47,735 bbls., a decline of 1,145, and Arkansas' 85,210, which shows a decrease of only 70 bbls.

Caddo light, Homer, Haynesville, DeSoto, Red River, Elm Grove, Bellevue, Cotton Valley heavy, Pleasant Hill and Stephens were stationary, or practically so. Cotton Valley light oil runs were off 75 bbls., Urania 50 and Caddo heavy 20 bbls. Smackover light oil was up 60 bbls. and the heavy oil off 380 bbls. from last week. El Dorado runs increased 195 bbls., Champolle runs gained 195 bbls., Bradley 25 and Lisbon's average was 30 bbls. and Nevada County's 10 bbls. under last week. Runs from the several pools were:

Louisiana	
Caddo light	10,495
Caddo heavy	3,785
Homer	4,470
Haynesville	6,340
DeSoto-Red River	4,155
Elm Grove	555
Bellevue	1,120
Cotton Valley light	4,475
Cotton Valley heavy	4,435
Urania	7,350
Pleasant Hill	555
Total	47,735
Arkansas	
El Dorado	5,535
Smackover light	8,135
Smackover heavy	63,780
Stephens	1,060
Nevada County	1,500
Lisbon	2,260
Champagnolle	2,815
Bradley	125
Total	85,210
Both states	132,945
Last week	134,160
Decrease	1,215

East Texas Completions

East Texas had four completions, all in Panola County. Natural Gas Products Co.'s No. 2 Roquemore in the B. C. Jordan Survey made 4,000,000 feet of gas total depth 957. S. H. Gardner got 3,000,000 feet of gas at 1,006 feet in No. 2 Cavin, in the same survey, Natural Gas Products Co.'s No. 4 T. C. Adams, in the Evans Brackins Survey, is abandoned as a salt water hole at 2,336 feet and The Texas Company's No. 4-A T. C. Adams

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CHAMPAGNOLLE'S SECOND PRODUCER IN NEW DEEP SAND MAKES 1,220 BBLS.

By D. H. Bancroft

EL DORADO, Ark., Apr. 23.—Magna Production Co. and Oilwell corporation's No. 1 Dumas, in Section 11-17-16, Union County, Arkansas, Champagnolle's second producer in the new deep sand tapped two weeks ago by Pure Oil Co.'s No. 1 Gregory in Section 10-17-14, remained the center of attraction in wildcat activities in the Shreveport division. According to expectations, it lived up to the 2,000 bbls. expected from the show it made on drill stem test. Completed flowing through 1-inch choke it produced 55 bbls. per hour, or 1,220 bbls. daily of 35.2 gravity crude from 14 feet of sand. total depth 3,239 feet with no show of water and less than 2 per cent sand and sediment. No estimate as to what it would do if produced wide open has been heard, and it is not likely that it will be flowed wide open, unless for the sake of satisfying curiosity, as there is no disposition to pull it into salt water. Sand conditions in the new pay are not sufficiently well known and operators are taking no chances.

Oil from the Pure and Magna completions, which have raised Champagnolle daily average runs from the field from 1,000 bbls. to 2,815 bbls. in the past three weeks, is being run by Root Refineries' 6-inch line to the plant at El Dorado. Magnolia Petroleum Co. also has a line to Lege tank farm 6 miles north of El Dorado and Lion Oil Refining Co. is reported planning a 4-inch line from the field to connect with its Smackover-El Dorado line a mile north of El Dorado. The last 24-hour gauge on the Magna well made it 1,290 bbls.

An analysis of the new Champagnolle crude by Louisiana Oil Refining Corp. shows 35 gravity and a recovery of 33 per cent gasoline, 11 per cent kerosene, 15 per cent gas oil, 38 per cent residuum, and 3 per cent refinery losses. It also has a 1.3 per cent sulphur content, which, however, is causing refiners in this territory no concern since they have been running Smackover crude, some of which ran as high as 4 per cent sulphur, for several years without any trouble, and Louisiana Oil Refining Corp. is running West Texas crude through its Gas Center plant in Shreveport without trouble or having to make any extensive changes or alterations in plant equipment.

Norphlet Completion

Magnolia Petroleum Co. completed a semiwildcat, or edge well in the Norphlet district of Smackover with No. 4 Cranston in Section 19-17-14, about half way between Norphlet and Champagnolle, pumping 12 bbls. of fluid, 50 per cent water from 3 feet of sand total depth 2,164 feet.

Completion of this well did not occasion much notice but activity in Champagnolle has already begun to assume much larger proportions, with arrangements under way to deepen older shallow

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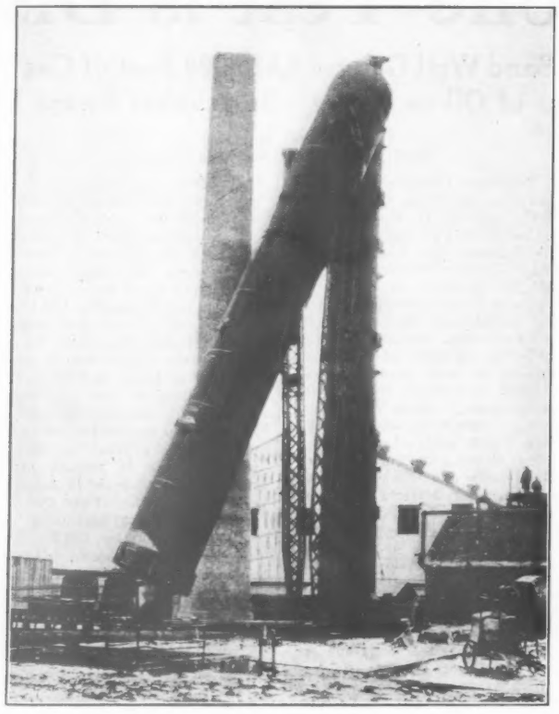

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Blue Ridge Well Extends Production

Watta Brothers' No. 1 Scott, Completed for 2,000 Bbls., Expected to Start Renewed Activity in That Area

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Apr. 23.—Extension of production at Blue Ridge, Fort Bend County, 500 feet to the northwest, was one of the most important late developments in Gulf Coast Field operations and in all probability will start renewed drilling activity at that dome, which already is one of the most active on the Gulf.

The extension well, Watts Brothers' No. 1 Scott, was one of three producers completed at Blue Ridge and one of a half dozen good wells in coastal territory during the week. Coming in for 2,000 bbls. of pipe-line oil late Friday it is one of the best producers completed at Blue Ridge in several months. Production is from sand around 3,685 feet.

Two other good wells at Blue Ridge were H. R. Cullen's No. 2 Lafferty, which came in flowing 700 bbls. daily from sand at 3,624 feet, and Gulf Production Co.'s No. 12 Luscher, which is making 1,600 bbls., 5 per cent salt water, from sand at 3,601 feet. The Watts well is 50 feet north and 50 feet west from the northeast corner of the Hicks Shropshire Survey, wildcat territory, while the Cullen well, in the Poitevent Survey, and the Gulf well, in the Thomas Habermacher Survey are in the main part of the field.

East Hackberry, Cameron Parish, Louisiana, a semiwildcat dome, got another well and a 150-foot west extension Thursday in Calcasieu Oil Co.'s No. 3 Caldwell. The well, making Saturday only 600 bbls. of net oil with some salt water, a total of approximately 1,500 to 1,800 bbls. of fluid, does not come up to the mark set by the three other producers completed by this company and indicates a possible edging off in this direction.

Except for a well drilled by Yount Lee Oil Co. in Kelso Bayou north of the Calcasieu producers, each of the other wells has been completed making practically pipe line oil, the smallest being 1,000 bbls. daily. Yount Lee's well came in making only 300 bbls. of fluid, 30 per cent water. Only one test so far has been abandoned, that being Calcasieu's No. 2 Watkins on the north side of the bayou which found the salt.

Discovery Finds Deeper Sand

As the week closed, the discovery well, No. 2 Caldwell, at East Hackberry which since the last of March had been drilling deeper from its original sand at 3,971-96 feet, had found a deeper sand around 4,200 feet and had set casing for a test. All the production so far in the field has been from 3,970 to 3,998 feet. Yount Lee's well being 100 feet shallower than that. Calcasieu Oil Co.'s No. 1 Dorion at East Hackberry Saturday was drilling at 5,046 feet, so far having failed to find any sand with commercial possibilities. Four other tests are drilling at East Hackberry but these have not reached the original producing level.

Following two abandonments by The Texas Company, Nos. 3 and 2 Green, during the previous 10 days, Abercrombie & Harrison abandoned their No. 2 Lacour in the mile north extension of the South Liberty Field. That district which looked extremely promising following the bringing in of an 1,800-bbl. producer by The Texas Company the latter part of February, so far has been marked only by disappointing developments and very puzzling irregularities.

However, the extension well is holding up remarkably on the pump making 1,240 bbls. of fluid daily, of which approximately 750 bbls. is net oil. The past week, the Sun Oil Co., in its No. 1 Richardson, approximately 1,000 feet southeast of the extension well, found a shallow oil sand around 900 feet, the fourth sand to be found in that district, each of the other producers having found an entirely different sands. Sun Oil Co.'s No. 2 Abshier came in during the week flowing 15 bbls. hourly but after 24 hours it stopped producing and was shut down. It, at 1,918-25 feet, is in the same sand as No. 1 Abshier, 150 feet west, which is making around 100 bbls. daily.

The Texas Company during the week made a location for its No. 4 Green, which is a direct north offset to the Sun's No. 2 Abshier, placing it 150 feet east of the No. 3 Green, abandoned in cap rock at 2,972 feet. So far all locations and drilling have been to the south of the original well and operators express the opinion that although operations so far have been uncertain and disappointing the north holds possibilities.

Texas Company Fishing

The Texas Company's No. 1 Pickett, the furthest west and southwest test, is fishing at 3,295 feet. This test has not hit the cap rock and promises to prove an unusually precipitous slope to the west in the dome. Three tests so far have hit the cap rock above the salt and in a space of less than 300 feet a drop from 2,792 to below 3,400 feet is correlated already. Sun Oil Co. started drilling No. 1 Singleton, 100 feet east of its No. 2 Abshier, during the week and R. L. Young's No. 1 Wood, the furthest east and southeast test Saturday was drilling at 900 feet. It is an east offset to Sun's No. 1 Richardson, which was preparing to drill into the new 900-foot sand found by it.

In the other South Liberty extension just north of the main field, interest centered around Yount Lee Oil Co.'s No. 4 Mitchell, 300 feet east of No. 1, the well which extended the field 500 feet north. No. 4, the furthest east test, found a salt water sand where the other tests found the production and Saturday was drilling deeper in another sand below 3,750 feet without an oil showing. The Texas Company's No. 9 Staiti was drilling gumbo and lime at 2,300 feet and No. 10 was in gumbo at 605 feet. Sun's No. 3 Mitchell was at 2,373 feet.

A string of new wells was completed at Spindletop during the week. These were Yount Lee Oil Co.'s No. 20 fee, 100 bbls. of 30 gravity pipe line oil flowing through 2½-inch tubing from a total depth of 4,662 feet.

Yount Lee Oil Co.'s No. 15 fee, 800 bbls. pipe line oil, 2½-inch tubing, 30 gravity, 3,806 feet.

Yount Lee Oil Co.'s No. 64 McFadden, 1,600 bbls. 28.5 gravity pipe line oil, five-eighths-inch choke, 2,929 feet.

Yount Lee Oil Co.'s No. 61 McFadden, 800 bbls. 27.4 gravity pipe line oil, 2½-inch tubing, 3,140 feet.

Rio Bravo Oil Co.'s No. 54 T. & N. O. Right of Way, spraying 25 bbls. of pipe line oil, 32.4 gravity, 4,026 feet.

Two Spindletop tests were abandoned during the week, these being Yount Lee Oil Co.'s No. 48 Gladys City, drilled to 6,351 feet, and Yount Lee Oil Co.'s No. 56, Gladys City, which drilled into salt to a total depth of 2,221 feet.

Yount Lee Oil Co.'s No. 45 McFadden, the deepest test drilled at Spindletop, has drill stem stuck between 6,600 and 6,700 feet.

Other completions and abandonments the past week were:

Boling—Texas Gulf Sulphur Co.'s No. 1 H. R. Farmer, salt water, abandoned 1,237 feet, northeast flank, Fort Bend County; same company's No. 7 J. R. Farmer (originally Sun Oil Co.'s), cap rock, abandoned, 1,565 feet, northeast flank.

Goose Creek—Gulf Production Co.'s No. 19 Hoffman-Gaillard, salt water, 4,550 feet.

Barbers Hill—R. L. Bartlett's No. 1 Fisher, pumping 40 bbls. net oil, 2,140 feet.

Jennings (La.)—Port City Oil Co.'s No. 5 S.F.F. (Jennings-Heywood), pumping 140 bbls. net oil, 1,848 feet.

Terrebonne (La.)—Southern Gas Co.'s No. 4 Southdown, 25,000,000 feet of gas, 1,398 feet; same company's No. 5 Southdown, salt water, abandoned, 1,400 feet.

Rycade Well Stops Flowing

At Bayou Bouillion, St. Martin Parish, Louisiana, Rycade Oil Corp.'s recently opened field, the discovery well and so far the only producer, stopped flowing suddenly Thursday, after producing steadily since completed March 12. It was completed as good for 4,000 bbls. of pipe line oil daily but the past week it had been making around 300 bbls. daily. Tubing is being run in an attempt to make the well flow. It is believed to have sanded up. Rycade's drilling test is down 2,300 feet.

Sorrento Dome, Ascension Parish, east of the Mississippi River, in Louisiana, is to get another test the first of the week in No. 6 United Land Co., which now has casing cemented on the cap rock showing oil. Cap rock in this test was hit considerably higher than in the other tests drilled. The test is about 250 feet west and a little south of the discovery well. Its total depth is a little below 1,600 feet while the discovery well was at a total depth of below 1,660 feet. The abandoned No. 5, which was still further west, ran lower than the discovery well. The discovery well, No. 4, has been shut in for several weeks.

Considerable excitement was caused the middle of the week when Juanita Oil Co. (Cypress Oil Co.) went into its No. 1 Kitsman at Cypress, about 20 miles northwest of Houston, and found oil standing. This test had been shut down several weeks after encountering a water sand at 1,922-51 feet. Operators, however, believe the oil to be old engine oil which probably drained into the hole.

Daily average production of coastal fields declined 1,734 bbls. during the week ending April 21 to another low mark of 119,920 bbls. The string of good wells completed at Blue Ridge and Spindletop came too late in the week for their production to be reflected in any material changes in the week's production figures.

Field Back on Producing List

At Moore's Field (Orchard), Fort Bend County, Gulf Production Co. reset screen in its No. 14 Moore, which stopped flowing several weeks ago, and put that field back on the producing list, it averaging 101 bbls. during the week. A well at Sweet Lake, Pure Oil Co.'s No. 4, was made to flow two hours early in the week, but outside of this there was no production at that field. Daily average production by fields was:

	Bbls.
Spindletop	36,384
Saratoga	1,126
Batson	1,451
Goose Creek	7,171
Sour Lake	3,331
Hull	11,267
Big Creek	1,436
Dewalt	260
West Columbia	3,015
Humble	3,379
Pierce Junction	11,362
Blue Ridge	5,833
Markham	225
Orange	4,886
Damon Mound	828
Dayton	116
South Liberty	3,920
High Island	177
Moores Field (Orchard)	101
Boling	1,993
Nash Dome	1,795
Barbers Hill	600
Allen Dome	94
Vinton	4,593
Starks	192
Edgerly	300
Evangeline	1,121
Lockport	5,223
Sweet Lake	....
Sulphur	658
Hackberry	1,180
Sorrento	....
Bayou Bouillion	200
Anse La Butte	56
Total this week	119,920
Total last week	121,724
Decrease	1,804

Daily Production Decreases

Southwest Texas and East Central Texas fields also suffered decreases in daily average production, the former district declining 596 bbls. and the latter 23 bbls. Production in these districts was:

Southwest Texas

Somerset	2,172
Lytton Springs	1,394
Dale	1,148
Luling	13,920
Miscellaneous	7,955
Total this week	26,589
Total last week	27,105
Decrease	516

East Central Texas

Mexia	7,343
Cedar Creek	630
Nigger Creek	720
Currie	497
Wortham	1,895
Richland	140
Powell	11,693
Total this week	23,318
Total last week	23,341
Decrease	23

Vacuum Oil Co. staked a location during the week for a wildcat near Thompson, Fort Bend County, and about 3½ miles south of Humble Oil & Refining Co.'s No. 1 Sugarland, the discovery well of the Dewalt Dome. The test test will be the No. 1 Levy and is in a district which several weeks ago received an active leasing play following gas showings in a water well being drilled on school land there.

For several years, that district has appeared as likely territory and Vacuum Oil Co. along with others blocked up several tracts. However, that country was not generally gone into until after the last gas showing, although a number of other wells drilled there had shown gas in sufficient quantities to be used for heating and lighting several farm homes.

Humble Rigged for Test

Humble Oil & Refining Co. has a rig up for its second test at Dewalt to the north, this being the No. 1 Brazos, 1,000 feet southeast of the discovery well. Humble Pipe Line Co.'s line from Dewalt to Pierce Junction, 11½ miles east, probably will be completed this week and the discovery well opened again. It has been flowing around 300 bbls. daily through a three-eighths-inch choke.

On the Allen Dome, Brazoria County, Roxana Petroleum Corp.'s No. 1 Random, which had been blowing gas and spraying 64 bbls. of oil daily, stopped producing during the week. It was cleaned and as the week closed was being bailed again, at the same depth of 4,942 feet. No. 4 Allen is drilling sticky shale with streaks of lime at 5,068 feet.

Humble Oil & Refining Co.'s No. 1 Wilson at Raccoon Bend, Austin County, is in black shale at 3,985 feet but at present is being changed to cable

(Continued on Page 127)

Potrero Pool Oil of Excellent Quality

New Field Is Link Between Rosecrans and Inglewood. Long Beach Likely to Have Two Peaks During Summer

By L. P. Stockman
Staff Correspondent, California Fields.

LOS ANGELES, Calif., Apr. 21.—The Associated Oil Co. has definitely established the existence of commercial production in the Potrero Field and the missing link between the Rosecrans and Inglewood districts of Los Angeles Basin is now a reality from a production standpoint, although the discovery of the Potrero Field really dates back to November, 1926, at which time the Associated discovered unmistakable signs of production in No. 1 Cypress. The company very wisely killed time following this discovery due to the undesirability of opening up a new field because of the overproduction situation and although a number of dusters were subsequently drilled by others around the Associated's holdings during 1927 this company was not stampeded into action. It is not probable that the Potrero Field will exert any immediate appreciable effect on production as the Associated company controls practically all of the probable productive area, although of course subsequent develpoments may change the present outlook. The Tidewater-Associated interests should be extremely gratified by the addition of this new field and it would be amiss if attention was not directed to the ability and perseverance of Joseph Jensen and Glenn Robertson, who together mapped out and geologized this locality.

Oil of High Quality

The Associated company's holdings in the new Potrero Field comprise both leasehold and fee-owned acreage and it might be mentioned in passing that the company checked out over $100,000 in securing its present holdings upon the advice of Mr. Jensen. No. 2 Cypress, the second well drilled in this area by the Associated company definitely p r o v e d up the existence of commercial production and incidentally boosted the reserves of the Associated Oil Co. very substantially. The well reveals the fact that the Potrero Field is in a class by itself and, while it will be considerably smaller in area than some of the other eight fields located on the Newport-Beverly fault zone, the quality of oil produced will offset this to a large extent as it is within 10 degrees of domestic California gasoline. No. 2 Cypress was drilled to 4,619 feet and the 8⅝-inch casing landed and cemented at 4,421 feet. Swabbing operations were started at 8 a. m., April 11, through 3-inch tubing hung at 3,994 feet. A little over four hours later the well started to flow at the rate of approximately 1,000 bbls. per day, the oil testing 47.5 degrees and showing a cut of 2.3 per cent. The production was turned into the flow tanks early on the morning of April 12 and a tank gauge the following day indicated a production of 1,049 bbls. of 47.2 gravity oil, the casing pressure ranging between 500 and 680 pounds and the tubing pressure between 110 pounds and 300 pounds. On April 14, No. 2 Cypress tanked 947 bbls. of 47.9 gravity oil and although the cut climbed to 5 per cent it dropped to 4 per cent on April 15 when the well produced 965 bbls. flowing under a tubing pressure of 275 pounds and a casing pressure of 750 pounds. The lack of adequate tankage and the absence of pipe line facilities resulted in the well being killed with water and shut in at noon, April 15. The production of No. 2 Cypress, the first commercial producer to be finished in the Potrero Field, shows an excellent quality crude and a sample test indicated a gravity of 48.6 A.P.I., 437 endpoint gasoline, 74.52 per cent; 4 point gasoline, 70.50 per cent; sulphur, 0.33 per cent. In addition to the production of crude, this new well flowed from 750,000 to 1,750,000 feet of natural gas daily, the casinghead content averaging 3.2 gallons per 1,000 feet by ether carbon dioxide and ice alcohol test.

Long Beach

The daily production of the Long Beach Field, which has registered a very substantial increase since the first of the year and a gain of approximately 70,000 bbls. per day since October when the present deep sand exploitation got under way, was further augmented by the completion of nine new wells during the past week. The increase in production at Long Beach has not been at all spectacular but the increase nevertheless has been exceptionally consistent. A careful check indicates a continued upward trend for the next five or six weeks and the exceptionally large number of new wells scheduled for completion should shove the daily production of this field up above the 175,000-bbl. mark between now and June 15. Two separate peaks are anticipated at Long Beach and while there will probably be a temporary decline after the attainment of the first high during the latter part of May or the first of June production will again respond to numerous completions during July and August and the second 1928 high expected to occur around this time may exceed the first, although this depends upon the rate of decline shown by new wells after completion. But, regardless of whether the second peak, expected to occur in July or August, equals or exceeds the first high, the industry may rest assured of one point and that is that no substantial decline should be anticipated in the daily production of Long Beach for several months. The amount of new work still being started practically precludes any appreciable drop, although the output will of course show a normal decline immediately following the peak production. Recent developments tend to indicate the attainment of a maximum peak somewhere between 175,000 and 200,000 bbls. per day and it is quite probable daily production will hover somewhere around 150,000 bbls. for some time after the final high has been reached in July or August. The Shell and California Petroleum companies both have considerable undrilled acreage and these two companies, the largest lease holders in the Long Beach Field, will continue an uninterrupted development campaign which will probably extend over several months.

Shell Largest Producer

The Shell company has resumed its position as the largest single producer in the Long Beach Field as a result of the completion of a number of new wells during the past several weeks. The Richfield company had temporarily supplanted the Shell, but the latter again leads the procession and should continue to do so due to its large favorable holdings. This position was further strengthened by the completion of three new wells on the Alamitos lease during the past week and a check indicates the probable acquisition of several more within 30 days. The Shell company started off the week with No. 27 Alamitos, which showed an initial daily production of 3,095 bbls. from a depth of 6,443 feet, the oil testing 29.5 degrees. This well was followed into production a day or two later by No. 29 Alamitos which tanked 3,290 bbls. from 6,453 feet, the hole being finished with a 5¾-inch oil string. The output in this instance, which is flowing through a 1½-inch bean under a pressure of 1,250 pounds, tests 30.6 degrees and shows a cut of less than 1 per cent. No. 31 Alamitos came in under a natural flow yesterday afternoon and while the actual tank gauge for the initi al 24-hour test has not been completed the well is flowing at the rate of 3,000 bbls. daily from 6,360 feet. The Shell Company staked 12 new locations late last week and actual rig construction is already under way. These include No. 7 Andrews, No. 6 Dobbins, Nos. 8, 9 and 10 on the Hutton property, Nos. 9 and 10 on the Jones lease, Nos. 5 and 6 on the Martin property, No. 8 Nesa, No. 9 Pickler and No. 4 fee.

The Pan American brought in an excellent completion when No. 1 McKeon was recompleted after being redrilled and deepened from 6,084 feet to 6,410 feet, from which depth it showed an initial production of 1,420 bbls. of clean 31.3 gravity oil daily. This company has four other wells nearing completion and this entire quartet should be tanking oil within a month. E. B. Campbell brought in No. 4 Long Beach flowing 1,910 bbls. of 28.9 gravity oil daily from the 6,291-foot level and if everything runs along according to schedule No. 3 should also be listed as an early completion. The Painted Hills Oil Co.'s No. 2 Merritt showed an initial production of 700 bbls. daily from 5,860 feet, but the output built up the following day to 925 bbls., the oil being clean and testing 29.7 degrees. The Rayana Oil Co. put No. 1 Roberts on a preliminary production test early in the week from the 5,520-foot level and while it showed a potentiality of 1,400 bbls. daily, drilling was resumed as it was thought that the additional penetration available would greatly stimulate production. The

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well, locat'on—	S-T-R	Depth	Status
Associated, No. 1 Cypress, Potrero	34- 2-14	5,408	75 bbls.
Associated, No. 2 Cypress, Potrero	34- 2-14	4,619	1,000 bbls.
Smith & Carpenter, No. 1 Smith, Potrero	35- 2-14	5,282	suspended
World Pet. Co., No. 1 Inglewood, Los Angeles Co.	28- 2-14	3,772	suspended
Mont. Park Oil Co., No. 1 Browning, Mont. Park	26- 1-12	4,530	reaming
Shell, No. 2 Mission, San Fernando	4- 2-15	1,001	hd. sd. drilling
Andrews, Otis, No. 1 Lancaster, Los Angeles Co.	23- 8-13	2,120	hd. sd. drilling
Woods, D. H., No. 1 Lancaster, Los Angeles Co.	5- 7-10	Rig	suspended
Security Pet. Co., No. 1 Lynwood, Los Angeles Co.	13- 3-13	4,695	hd. sd. drilling
Dominguez Ext., No. 1 Compton, Los Angeles Co.	27- 3-13	5,510	pipe trouble
San Clemente Oil Co., No. 1 Peck, Hawthorne	20- 3-14	5,765	to deepen
Shell, No. 1 Dupree, Hawthorne	29- 3-14	5,592	may abandon
Easton & Smith, No. 1 Calabasas, Los Angeles Co.	19- 1-17	627	sd. sh. drilling
Scott & Currier, No. 1 Hawthorne, Los Angeles Co.	33- 3-14	140	suspended
White Behr, No. 1 Watson, Los Angeles Co.	21- 4-14	5,000	sd. sh. drilling
Buttrum, F. W., No. 1 Richfield, Orange Co.	36- 3- 9	4,515	cleaning out
Ohio Oil Co., No. 1 Anaheim, Orange Co.	9- 4-11	4,410	hd. sd. drilling
The Texas Company, No. 1 Santa Ana, Orange Co.	34- 4-10	....	location
Prairie Oil & Gas, No. 1 Westminster, Orange Co.	13- 5-11	120	sd. drilling
Kneuper, A. D., No. 1 Seal Beach, Orange Co.	10- 5-12	Rig	suspended
Getty, George F., No. 1 Seal Beach, Orange Co.	14- 5-12	5,870	hd. sd. drilling
Shell, No. 1 Stern, Orange Co.	22- 3-10	4,700	hd. sd. drilling
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	2,625	hd. sd. drilling
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	2,980	suspended
Davenport O. & G., No. 1 S. Marcos, S. Diego. Co.	30-12- 2	386	hd. sd. drilling
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	500	hd. sd. drilling
Mills, J. P., No. 1 Pueblo, San Diego Co.	18-15- 3	2,875	to abandon

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Bolsa Chica, No. 1 Kettleman, Kings Co.	30-23-19	3,502	suspended
General Pet., No. 2 Ochsner, Kettleman Hills	28-22-18	6,755	suspended
South Coalinga, Well No. 1, Kettleman Hills	35-24-19	3,110	suspended
Monocline Dev. Co., Well No. 1, Kettleman Hills	7-21-21	4,308	suspended
McPhail, Hugh, Well No. 1, Kettleman Hills	13-24-18	2,100	suspended
Milham Expltn., No. 1 Kettleman, Kings Co.	2-22-17	7,215	sd. sh. drilling
Star Petroleum, No. 2 Canet, Ventura Co.	13- 3-23	5,975	hd. sd. drilling
Standard, No. 5 Saticoy, Ventura Co.	14- 2-22	1,390	gr. sd. drilling
Calif. West. Oil Co., No. 1 Elkins, Ventura Co.	5- 3-19	2,171	hd. sd. drilling
Exline, Emma, No. 1 Saticoy, Ventura Co.	33- 3-21	Rig	suspended
Petroleum Sec., No. 1 Diablo, Ventura Co.	26- 5-18	4,500	hd. sd. drilling
Parkford, E. A., No. 1 Strathern, Ventura Co.	5- 2-18	4,002	suspended
Shell, No. 1 Strathern, Ventura Co.	6- 2-18	4,730	hd. sd. drilling
American Oil Co., No. 1 Camarillo, Ventura Co.	33- 2-20	175	suspended
Hackworth, J. W., No. 1 Ojai, Ventura Co.	11- 4-23	2,311	hd. sd. drilling
Scott Pet. Co., No. 1 Rincon, Ventura Co.	35- 4-25	3,895	recemented
Shell, No. 3 Grubb, Ventura Co.	26- 2-22	300	sd. drilling
Shell, No. 1 Snodgrass, Ventura Co.	23- 2-22	616	sd. drilling
Shell, No. 2 Berlywood, Moorpark	32- 3-20	6,900	hd. sd. drilling
Miley Oil Co., No. 1 Red Mountain, Ventura Co.	7- 3-23	980	suspended
McAdams, J. E., No. 1 Buttonwillow, Kern Co.	26-29-23	6,010	abandoning
Milham Expltn., No. 1-A Buttonwillow, Kern Co.	8-28-23	4,662	gas well
Milham Expltn., No. 2 Buttonwillow, Kern Co.	8-28-23	2,730	gas well
Milham Expltn., No. 3 Buttonwillow, Kern Co.	8-28-23	2,694	gas well
Milham Expltn., No. 4 Buttonwillow, Kern Co.	5-28-23	2,670	gas well
Doheny-Stone, No. 1 Salisbury, Kern Co.	7-29-24	4,291	hd. sd. drilling
Sou. Calif. Gas Co., No. 1 Buttonwillow, Kern Co.	4-28-23	2,830	testing
Sou. Calif. Gas Co., No. 2 Buttonwillow, Kern Co.	10-28-23	....	location
Richfield Oil Co., No. 1 Semitropic, Kern Co.	21-26-22	1,620	suspended
Pacific Eastern, No. 1 Union Ave., Kern Co.	6-30-28	5,640	suspended
Pacific Eastern, No. 2 Union Ave., Kern Co.	6-30-28	4,500	testing
Jackson & Chamberlain, No. 1 Bakersfield, Kern Co.	19-29-28	601	sd. sh. drilling
O'Donnell, J. E., No. 1 Greenfield, Kern Co.	31-30-28	3,412	hd. sd. drilling
Superior Oil Co., No. 1 Edison, Kern Co.	24-29-29	3,198	hd. sd. drilling
Stabler, W. W., No. 1 Comanche Point, Kern Co.	28-32-29	2,201	hd. sd. drilling
Midway Northern, No. 1 Edison, Kern Co.	29-29-30	3,280	hd. sd. drilling
Shell, No. 1 Mon Bluff, Kern Co.	3-28-28	1,200	suspended
North American, No. 1-A Delano, Kern Co.	5-25-26	5,160	br. sh. drilling
General Pet., No. 1 McFarland, Kern Co.	35-25-25	....	location
McVey, Max, No. 1 Shafter, Kern Co.	8-28-25	Mtl.	building rig
Fresno Madera Oil Co., No. 1 Clovis, Fresno	18-12-21	4,066	suspended
Texas Pacific, No. 1 Brown, San Luis Obispo	26-32-14	2,420	hd. sd. drilling
Richfield, No. 1 Wreden, San Luis Obispo Co.	10-29-17	3,130	suspended
Richfield, No. 1 Cariswa, San Luis Obispo Co.	15-29-17	3,300	br. sh. drilling
Union Oil Co., No. 1 Huasna, San Luis Obispo Co.	34-32-15	1,575	hd. sd. drilling
San Luis Synd., Well No. 1, San Luis Obispo Co.	29-31-15	2,961	sd. sh. drilling
Sequoia Oil Co., Well No. 1, San Mateo Co.	13- 7- 5	1,510	hd. sd. drilling
Shell, No. 1 Cowell, San Mateo Co.	8- 6- 5	5,906	to abandon
Shell, No. 2 Cowell, San Mateo Co.	8- 6- 5	Rig	rigging up
Shell, No. 1 Butts, San Mateo Co.	16- 6- 5	2,584	fishing
Shell, No. 1 Mossi, Petaluma	8- 5- 6	1,790	hd. sd. drilling
R. Y. Hanlyn, Well No. 1, Alameda Co.	3- 5- 2	150	sd. drilling
Thomas & Hammill, Well No. 1, Alameda Co.	16- 3- 3	1,070	water trouble
Tepesquit Oil Co., Well No. 1, Santa Barbara Co.	3- 9-32	1,970	hd. sd. drilling
Becker, Geo. F., No. 1 Summerland, S. Barbara Co.	33- 4-25	3,045	testing
Twin State Oil Co., No. 1 Modoc, S. Barbara Co.	20- 4-27	3,220	hd. sd. drilling
Fort Wayne Synd., No. 1-A Goodcell, Madera Co.	22-10-17	Rig	suspended
Continental Oil Co., No. 2 Smith, Colusa Co.	31-18- 4	4,300	cleaning out
Colus Oil Co., Well No. 1, Colusa Co.	31-15- 4	380	hd. sd. drilling
Nuna Oil Co., Well No. 1, Colusa Co.	19-15- 4	318	sd. drilling
Marland Oil Co., No. 1 Bradley, Monterey Co.	32-24-11	2,780	fishing
North Counties Oil Co., Well No. 2, Humboldt Co.	36- 2- 1	2,110	hd. sd. drilling
Humboldt Oil Co., Well No. 1, Humboldt Co.	6- 2- 1	3,035	hd. sd. drilling
Tuck, J. W., Well No. 1, Santa Clara Co.	9- 8- 1	262	sd. sh. drilling

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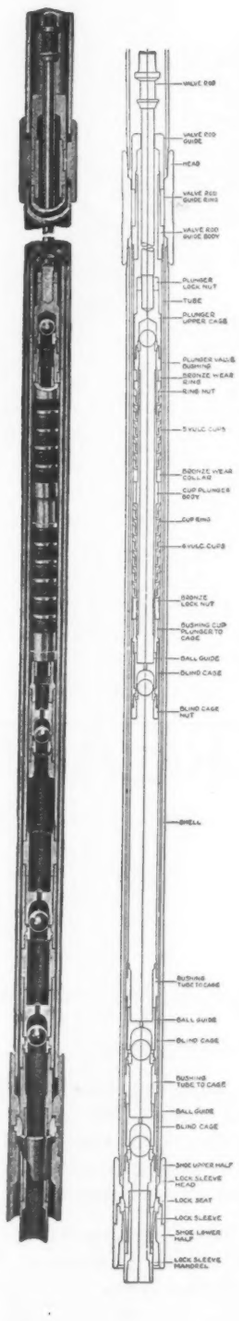


Cypress Oil Co. followed a similar procedure with No. 3 Crest, which showed an initial of 1,100 bbls. daily on an initial production test from 5,820 feet and an additional 500 feet of hole in each case will probable result in a larger sustained production.

Other Operations

The General Petroleum Co. did not experience very much success with No. 3 Black & Drake as this well only made 500 bbls. daily from 6,140 feet, although the oil is of a good quality testing 30.4 degrees and being practically clean. No. 5 Boyer-Kelley, No. 4 Clock, No. 7 Boyle-Perry and No. 8 K. & H. should offset this small well, however, as these four wells show every indication of resulting in substantial production within two weeks. The MacMillan Petroleum's No. 5 came in wet early in the week from 6,340 feet and the initial output of this recompletion will probably be doubled if the company succeeds in effecting a satisfactory water shutoff. The cut shown by this well is probably due to mechanical trouble as it was cemented through perforations at 5,230 feet. Another cement job around 5,400 feet will probably prove effective as a survey indicates much better success can be anticipated by cementing lower in the hole. The California Petroleum Corp. finished the largest well brought in at Long Beach during the week when No. 2 Lewis came in flowing 3,410 bbls. of 30.6 gravity oil daily from a depth of 6,702 feet. The completion of this well boosted the California Petroleum's daily production at Long Beach to approximately 12,000 bbls., and the several other drilling projects nearing completion should augment this still further within 30 days. Altogether, the California Petroleum has 16 projected deep zone wells under way, a large part of which are assured of substantial production upon completion. The last well finished at Long Beach during the current week was the Herndon Petroleum Co.'s No. 4 Dabney, which came in flowing 960 bbls. daily from 6,450 feet, the oil testing 29.6 degrees and showing a cut of less than 1 per cent.

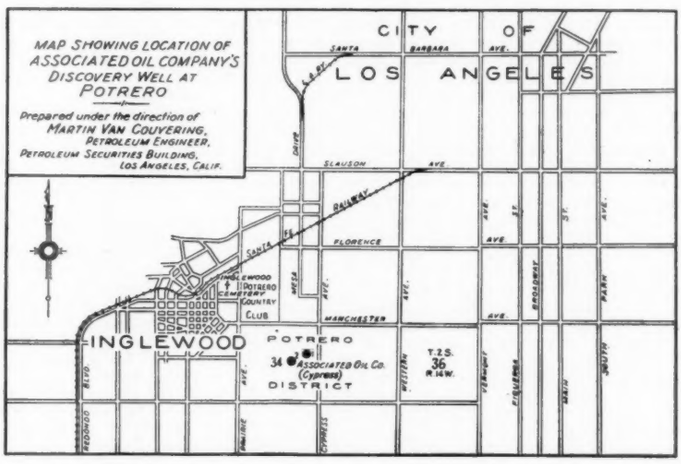
Ventura Avenue

There were no new wells finished in the Ventura Avenue Field during the week, but a check of development work under way indicates the probability of a number of completions during the next 30 days. There are 14 new wells and deepening projects in this field below the 6,000-foot level and if normal footage is made the greater part of them should be tanking oil before the close of May. Production of the Long Beach Field is also scheduled to register a very substantial increase during the coming month and these two fields may push state production well above 650,000 bbls. per day if no further curtailment measures are undertaken. The Associated's No. 100 Lloyd is perhaps the most interesting drilling project under way in the Ventura Avenue Field and should set a new record for deep sand production if successfully completed as the bit is now rotating ahead at 7,310 feet. Recent cores indicate the presence of a well saturated oil sand and substantial production is anticipated.

While commenting on deep sand production at Ventura Avenue it might not be amiss to call attention to the fact that none of the operators has yet drilled entirely through the oil-bearing formation. The Petroleum Securities, which is running seven strings on the Orton lease in the southern part of the field, will probably have Nos. 2 and 4 on production soon, as both are nearing the 7,000-foot level. The Shell's next completion in this area will probably be No. 25 Gosnell, now rotating ahead at 6,990 feet, which will be followed into production within a short time by No. 11 Gosnell and No. 24 Taylor, both in proven territory and assured of good production. The Bolsa Chica company has temporarily suspended work on No. 3 Hartman and will devote its entire attention to deep sand exploitation at Long Beach.

Rincon

The Chanslor-Canfield Midway Oil Co. put No. 1-B Hobson on a preliminary production test a few days ago when it came in unexpectedly and this well, the second to be drilled in the Rincon Field, showed a potentiality of 700 bbls. per day before sanding up. No. 1-B Hobson, which was spudded in subsequent to the coring of an oil sand in No 1-A Hobson, the initial wildcat in this area, was originally carried down to 5,740 feet, at which point mechanical trouble developed and prevented a satisfactory production test. The Chanslor-Canfield interests have been working on this hole for almost a year and the failure to recover the fish which had been holding up progress resulted in the decision to shoot the 5¾-inch as a preliminary move to clear the hole of junk. The crew was agreeably surprised to find that this had apparently cleared the hole and stimulated production, as the well immediately started to flow. The significance of the production shown by No. 1-B Hobson lies in the fact that it probably indicates the existence of another productive horizon below any of the zones already tested out along the ocean front. This well is about a mile southeast of the area under development along the ocean and at a somewhat higher elevation. No 2 State of the Pan American, located in the area under intensive development, was scheduled to make a bid for production in the recently discovered 3,900-foot horizon, but bridged over at about 2,200 feet and will be delayed until the hole has been cleaned out and a 6¼-inch liner run in. The Miley Oil Co. has also encountered this 3,900-foot zone and both tests should be watched closely as the 50 feet of sand actually opened shows a very heavy saturation. The entire thickness of sand has not yet been determined and if this horizon is of sufficient thickness to sustain intensive drilling, production at Rincon will show a very substantial increase within a relatively short time as the 22 projects will all be carried down as quickly as possible.


MAP SHOWING LOCATION OF ASSOCIATED OIL COMPANY'S DISCOVERY WELL AT POTRERO
Prepared under the direction of MARTIN VAN COUYERING, PETROLEUM ENGINEER, PETROLEUM SECURITIES BUILDING, LOS ANGELES, CALIF.
CITY OF LOS ANGELES
SANTA BARBARA AVE.
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MANCHESTER
INGLEWOOD
POTRERO
ASSOCIATED OIL CO. (Cypress)
DISTRICT
T. 2 S. 36 R. 14 W.
INGLEWOOD CEMETERY COUNTRY CLUB

Seal Beach

The Marland Oil Co. recompleted No. 8 Bixby in the older area of the Seal Beach Field early in the week and this well, which was redrilled and deepened from 4,502 feet to 4,781 feet, was returned to production flowing 826 bbls. of clean 27.1-gravity oil daily. No. 8 Bixby was originally completed doing 1,620 bbls. daily from 4,410 feet in February, 1927, and recompleted three months later doing 1,405 bbls. per day from 4,502 feet. Drilling operations in this field have been reduced to a minimum and, while the Marland and Standard companies are running one or two strings of tools in order to comply with lease requirements, this work is practically negligible. The Standard, incidentally, has reduced its entire drilling program throughout the State and a recent check indicated that it is only running about 10 strings of tools. Paul Getty is reaming his No. 2 fee in the Alamitos Heights town lot area of the Seal Beach Field and this well, which has been carried down to 6,530 feet, will test out the potentiality of the deep Bonner zone discovered by the Richfield Oil Co. several months ago below the 6,000-foot level. Getty's No. 2 fee is not showing any unusual kick and the result is still in doubt.

No. 2 Naples of the Petroleum Securities, another projected deep zone completion, was rotating ahead a few days ago at 6,310 feet and the formation at that depth, a gray sand streaked with oil sand, does not make the Bonner zone any too promising for substantial production. This deep horizon, located below the 6,000-foot level, has proven somewhat of an enigma since being opened up several months ago due to the varying results attained and, although the Marland company subsequently finished several wells in the northern part of the Selover lease doing around 1,000 bbls. each from this zone, operators in the town lot area to the north have not been as successful, notwithstanding the apex of the Alamitos Heights structure is north of the Marland company's completions on the Selover lease. Future work may change the aspect but the productivity of this deep zone in the Alamitos Heights area may not be determined for several months due to the desire of operators to prevent any undue development at present.

Huntington Beach

Two wells were put on production in the town lot area of the Huntington Beach Field, one being a recompletion. This was Fred Garliepp's No. 1 Huntington, returned to production pumping 180 bbls. daily after being redrilled and deepened from 3,954 feet to 4,311 feet, the hole being finished with a 6¼-inch liner carrying 170 feet of perforated. The World Petroleum Corp. completed No. 10 M. & B., a new well at 3,951 feet, and it came in under a natural flow doing 295 bbls. of clean 23 1-gravity oil daily. In addition to the crude oil production, this new well is making 250,000 feet of saturated wet gas daily, the casinghead content running a little better than 2 gallons for each 1,000 feet of gas treated. Only a small amount of drilling is under way in the Huntington Beach Field, due principally to the limited number of locations available in this field and the deep sand exploitation under way at Long Beach, the latter area naturally proving far more attractive. The small amount of development under way at Huntington will result in fewer completions, although a limited number of new wells may be anticipated from time to time. Very few operators in this field are going after the lower zone around the 4,500-foot level, but there are six or eight wells under way which have the 2,150-foot horizon as their objective and most of them should be finished within a month. The first zone was passed up during the early stages of development because of the prolific tendencies of the deep horizon and as a consequence these 2,150-foot completions are showing a satisfactory production, averaging anywhere from 100 to 300 bbls. per day initially.

Midway-Sunset

The Republic Petroleum's wonder well in the Midway-Sunset Field, No. 25, in Section 8-32-23, is holding up to its initial production in a remarkable manner and operators going down after this sand are extremely gratified at the showing to date. The completion of this well has not resulted in any general deepening campaign, although this work may subsequently lead to additional drilling if substantial production is developed. Three wells are actually under way with this sand as their objective, the lenticular condition of sections of this field retarding additional drilling until developments warrant. The Chanslor-Canfield Midway Oil Co. has two wells under way, No. 29 in Section 8-32-23, and No. 4 in Section 7-32-23, both of which should be completed within 30 days as the Republic sand is relatively shallow, 2,704 feet. The Republic's No. 25 is still flow-

(Continued on Page 132)

OIL PRODUCERS GUESSING AS TO SIZE OF MUSKEGON COUNTY POOL

By Special Correspondent

MUSKEGON, Mich., Apr. 23.—Latest developments in the Muskegon Township Field in Muskegon County, Michigan, have started operators, lease hounds and drillers speculating as to how big the initial pool opened here with the discovery well last December 22 is going to be after all and where in this or other counties in Michigan the next considerable pool will be found.

As additional holes are completed an increasing number of operators are looking to new locations within a radius of a few miles to develop new supplies of oil. There are several factors, however, which have made the operators hesitant to label the present pool one of limited potentiality.

One of the features of the pool so far as it has been developed is that the largest producer lies three-quarters of a mile west of the discovery well and half a mile from what ordinarily would be called the heart of the field. In the small area slightly more than a half mile directly east of the largest producer are the largest five other flowing oil wells and the two big gassers.

The strange feature of this situation is that within another quarter of a mile west of the biggest well the formation falls off about 35 feet and only one 10-bbl.-a-day pumper has been brought in. Again, one mile and a half southwest of the biggest well a dry hole was brought in. In another well exactly a mile due south there were no signs of oil until the well was about to be abandoned and then only a 2-foot show more than 50 feet lower than in the discovery well.

In four completions to the north and northeast of the heart of the field, only two small pumpers have been developed from shows in the Traverse 25 to 30 feet lower than in the discovery well. These two pumpers are located side by side and both are less than half a mile northwest of the discovery well. The other two holes were dry and have been abandoned.

Two Directions Unexplored

Two directions from the heart of the field have not yet been explored. Those are due east and southeast. Development in either of the two will necessitate crossing one or more branches of the Muskegon River as it spreads out in a delta nearly 2 miles wide just northeast of the city of Muskegon. As yet the high water of spring prohibits much development on the river flats.

In the meantime new activity in the Muskegon Field proper has centered largely about the Joliet-Morris No. 1 Nichols well in the NE NW Section 8, now producing about 175 bbls. per day as the largest well in the field.

The first offset to the Nichols well

(Continued on Page 132)

Oregon Basin Busiest Area in Wyoming

White Eagle Highest Bidder for Grass Creek and Big Muddy Royalty Oil. Torchlight Field, Big Horn County, More Active

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Apr. 21.—A variety of developments served to interest the oil men in the Rocky Mountain area the past week. The White Eagle Oil & Refining Co. was the highest bidder for the State's royalty oil from the Grass Creek and Big Muddy Fields. Drilling operations in Wyoming were mostly routine with no completions in Salt Creek. The second well on the new Ant Hills anticline in Niobrara County made 176 bbls. initial in a test, and a showing for a 100-bbl. well was made in a test on the edge of Teapot Dome. Several Oregon Basin wells are drilling in and the Ohio Oil Co.'s Hiawatha Dome test near the Colorado line, had 4,000,000 feet of gas in a 10-foot stray sand.

New Mexico is to have a small absorption plant in the Kutz Canon district in San Juan County, where three gas wells have been completed; several new locations have been made in Eddy County, and several abandonments were reported in the northwest area.

The Crystal Carbon Co. has a 2,000,000-foot gas well in eastern Utah, the Phillips Petroleum Co.'s test on the Barrier Creek anticline in Wayne County is getting under way, and other operations show nothing outside of the routine.

The Midwest Refining Co. (Standard of Indiana) has a banner out in front of its offices in Denver announcing that it has commenced marketing its gasoline under its own (Midwest) brand in the Rocky Mountain states, and the Producers & Refiners is starting a test well on the Pole Mountain structure in Jackson County. Completions were confined to an 80-bbl. well on the Tow Creek Dome and two small wells and two abandonments in Fremont County.

Wyoming

The White Eagle Oil & Refining Co. was the highest bidder for royalty oil from State land in the Grass Creek and Big Muddy Fields among those who submitted bids to the State Land Board on April 16. The bid price for Grass Creek royalty oil, the Mid-Continent posted price for oil of the same gravity plus 2½ cents per barrel, or the posted field price, whichever should be the highest. The White Eagle bid for the Big Muddy royalty oil was the Mid-Continent price plus 22 cents per barrel, or posted field price plus 5 cents per barrel, whichever should be the highest. The contract was awarded to the White Eagle Co. for the Grass Creek crude, the present contract expiring April 30, but it is understood that the Big Muddy contract has not yet been completed as existing contract has until next August to run. Royalty oil from Rock Creek, Osage, Ferris, Elk Basin and Mahoney Dome also were offered, but there was no bid higher than field prices received and no awards on these were made. The companies submitting bids other than the White Eagle were the Ohio Oil Co., the Midwest Refining Co. and the Continental Oil Co. Bids on Salt Creek royalty oil from State land were not called for, the present contract held by the White Eagle Co. not expiring until September 30, 1928. Last year the royalty oil from State land in Grass Creek was 56,043 bbls., and from Big Muddy, 73,043 bbls.

La Barge Field

Press dispatches stated the past week that the Texas Production Co., subsidiary of The Texas Corp., had taken over the California Petroleum Co.'s operation in the La Barge Field in southwestern Wyoming. Officials in Denver state there has been no transfer of the La Barge operation. However, such a transfer is not unlikely, but just when is not certain. There is not very much activity in the La Barge area at present, most of the wells remaining shut down. Stormy weather with heavy snowfall prevailed over the region the past week. The California Petroleum Co. has one 80,000 and one 55,000-bbl. tanks in the field and both are reported full of oil awaiting the completion of the pipe line from the field to Opal. In the meantime the company's pumping wells are shut in, and only the flowing wells are being produced. This oil is moving by truck to the railroad and then shipped in tank cars to the Utah Oil Refining Co. at Salt Lake City. The California Petroleum Co.'s production is under contract to the Midwest Refining Co. Among the other companies the Utah Oil Refining Co. is pumping its well in Section 10, the Reese Oil Co. is pumping two wells in Section 27, the Wolf Oil Co. is pumping two wells in Section 3, and the Superior Oil Co. is pumping two wells in Section 3. The Ogden-La Barge Oil Co.'s No. 1, Section 18-27-113, is drililng at 2,200 feet, and the Rainbow Oil Co. is trying to shut off water in its No. 7 on Section 3-26-113. No report was received from the California Co.'s operation in Snyder Basin as the roads are impassable. Material for the Midwest Refining Co.'s pipe line from the La Barge Field to Opal is now being delivered at Opal. The contracts have been let and between 75 and 100 men already have arrived ready to go to work. Actual laying of pipe is expected to begin within a few days. Poles have been strung for telephone line along the right of way and temporary quarters for workmen are being constructed at Opal.

Salt Creek

There were no completions reported in Salt Creek the past week. The Carter Oil Co. is going back into the Billy Creek Field in Johnson County north of the Salt Creek Field and will start another deep test. This company has six gas wells on this structure completed in the Wall Creek sands. Last year it made an attempt to drill down to horizons below the gas belt in search of oil, but had to abandon the hole before reaching the objective. This well was No. 2 Rider, NW SE Section 17-48-82, which was estimated good for 70,000,000 feet in the gas horizon. It was drilled to 4,398 feet.

Oregon Basin

The Oregon Basin operation in Park County continues to be the most active in the State. The J. W. Bales No. 1 Beck, SE NW Section 20-52-100, on the north side of the structure and 3 miles north of the Ohio's discovery well in Section 8-51-100, and on the north edge of an old lake bed, continues to attract attention. Two weeks ago it was reported having topped the Frontier at 1,010 feet with a showing of light oil of 45 gravity. Late reports are that it has been drilled down to 1,200 feet and is showing 3,000,000 feet of gas and some more light oil with some water in the hole. An effort will be made to shut off the water and make a test. The Frontier on the top of the dome is a gas horizon and there has been a belief that wells on the edge might find oil in that horizon. The oil being produced in wells near the top comes from the Embar and Tensleep horizons considerably below the Frontier. The Ohio Oil Co.'s No. 1 Baston, NE cor. Section 6-50-100, is drilling at 3,681 feet in the top of the Tensleep with the hole full of oil. The Embar was topped at 3,427 feet and the Tensleep at 3,646 feet. Same company's No. 3 Sonners, NE NW Section 8-51-100, is drilling in the Embar at 3,370 feet with considerable oil showing. It is about 19 feet into the sand and has apparently 200 feet to go to reach the Tensleep.

The Ohio Oil Co.'s No. 2 Wilson, NW cor. Section 4-50-100, is fishing for parted bit at 3,451 feet. Charles E. Orchard's No. 1 Rue, SW cor. Section 28-51-100, is drilling at 3,600 feet, being about 100 feet into the Embar sand. Intentions are to go another 150 feet to 3,750 feet. A rotary is being used to drill in and there is no way to gauge the quantity of oil showing, but Mr. Orchard estimates that if cleaned out it would make around 500 bbls. as it stands. The Continental Oil Co.'s No. 1-A State, NW cor. Section 16-51-100, is drilling at 2,138 feet after underreaming to lower pipe to 2,127 feet. The Enalpac Oil & Gas Co.'s No. 1 Western States, NE SW Section 30-51-100, is drilling at 1,860 feet, and its No. 2 Pauline, SW cor. SE Section 5-51-100, is fishing for pipe at 1,700 feet. Ross & Richards' No. 1, Section 28-52-101, is drilling at 340 feet and the Wisconsin Holding Co.'s No. 1 Rausch, NW cor. Section 9-51-100, is drilling at 2,300 feet. The Lenco Petroleum Co.'s No. 1 Rousseau, NE NW Section 33-51-100, which showed considerable gas and oil below the red beds, is drilling at 3,080 feet, having made only 10 feet of new hole the past week. Same company's No. 1 Robertson, NE cor. Section 1-50-101, is drilling at 1,270 feet and its No. 1 Lyle, Section 24-51-101, is drilling at 1,705 feet. Its No. 1 Pulley, Section 13-51-101, is resuming at 1,025 feet after changing over to rotary. The 3-Holding Association's No. 1 Downing, Section 35-51-100, is drilling at 515 feet with machine rig. The Producers & Refiners' No. 1 Frisby, SW cor. NE Section 32-52-100, is drilling at 2,269 feet in sandy shale. The Ferdig-Wyoming Oil Co.'s No. 1 Hough, SE cor. Section 19-51-100, is drilling at 3800 feet, 110 feet in the Embar with the hole full of oil. This is the deepest well in the field. Cody Petroleum Co.'s No. 2 Klindt, NE NE Section 7-15-100, is drilling at 3,240 feet.

The Cody Petroleum Co. is reported to have marketed about 25,000 bbls. of crude from its No. 1 Klindt, NE SE NE Section 7-51-100, in March, of which 15,000 bbls. went to the International Refining Co. at Sunburst, Mont., and the remaining 10,000 bbls. to the refinery at Coutts, Alberta, and other destinations.

Buffalo Basin

The Ohio Oil Co.'s No. 2 Buffalo, Section 3-47-100, Buffalo Basin Dome in Park County, is trying to straighten a crooked hole at 800 feet, and same company's No. 1 Pulley, Section 27-53-101, on the Shoshone anticline, is drilling at 3,385 feet.

The Buck Creek Oil Co.'s No. 1 Hattie Peterson, NW cor. Section 30-37-62, Ant Hills anticline in Niobrara County, has shut off oil sand topped at 3,928 feet and is drilling at 3,963 feet. Another sand is expected shortly. The first sand tested 175 bbls. a day during a short test, or about the same as the discovery well one-fourth mile to the west.

In Sweetwater County, the Custer Petroleum Co.'s No. 1 Wilson, Section 24-12-100, on the Hiawatha structure, oper-

(Continued on Page 80)

ADDITIONAL WELLS TO BE DRILLED IN SKIFF FIELD, SOUTH ALBERTA

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Apr. 21.—In the Skiff Field, southern Alberta, Devenish Petroleum No. 2 well has been located in LSD 11, Section 11-5-14w4. This is the first test to be drilled under the agreement between Devenish Petroleum, Ltd., and Imperial Oil, Ltd. The location is on the northern slope of Etzikom Coulee, about 3 miles south and 1 mile east of Devenish Petroleum No. 1, the discovery well, which was located in LSD 5, Section 27-5-14w4. The structure runs northwesterly across Etzikom Coulee, and No. 2 well is nearly in the center of the structure. A combination rotary-standard outfit is now being moved to the field and it is understood three 8-hour tours will be run. No. 2 is expected to spud in early in May. No. 2 location is reported to be 80 feet higher structurally than No. 1. In drilling, oil from No. 1 well will be used for fuel. An ample water supply has already been secured and a camp will be built to accommodate 25 to 30 men. The crew is now being assembled. Devenish Petroleum No. 1, LSD 5, Section 27-5-14w4, will be left with the derrick standing and some equipment on location; and when the field is further proven and a pipe line built it will be put on the pump. It is still claimed to be good for 200 to 250 bbls. a day of 20.5 crude. No. 1 got production at 3,090 feet, and No. 2 is expected to reach the sand by July, when No. 3 will be started. No location has yet been made for No 3. O. G. Devenish, who located No. 2, will have charge of the drilling there under the terms of the agreement between the two companies. The agreement, as recently rearranged, calls for the drilling of four additional wells by October, 1929, in addition to the two to be drilled this season.

Turner Valley Production

In the Turner Valley Field, southwest of Calgary, the latest production figures are as follows (in barrels):

Crude Naphtha Producers

Royalite Nos. 1 and 2	8
McLeod Oil Co. No. 2	40
McLeod No. 1	150
Royalite Oil Co. No. 7	59
Illinois-Alberta No. 1	95
Vulcan Oils No. 1	100
Dalhousie Oil Co. No. 1	250
Royalite No. 4	603
Total	1,305

Light Crude Oil Producers

Canada Southern No. 1	15
Royalite No. 10	18
Home Oil Co. No. 1	24
New McDougall-Segur No. 1	33
New McDougall-Segur No. 2	39
Dalhousie No. 5	50
Total	179

This gives an aggregate daily production for the field of 1,484 bbls. of crude naphtha and light crude oil. The prices at which most of the production is taken run $3.95 per barrel for the naphtha and $2.95 for the light crude oil.

Increased Production

McLeod Oil Co.'s No. 1, LSD 16, Section 1-20-3w5, recently deepened to the Madison limestone horizon, has definitely increased its crude naphtha production to 150 bbls. a day, and indications are it will do still better. McLeod No. 3, same

(Continued on Page 128)

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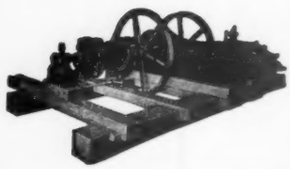

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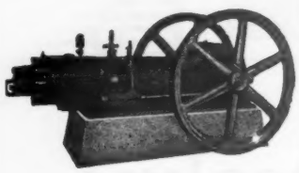
Size for Mid-Continent and Western Service, Price $3,700.00. Sizes for Eastern Service $2,600.00 and $3,350.00 F.O.B. Franklin, Pa.



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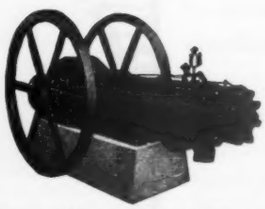
This light running mate to the drilling engine will do your swabbing and pumping at an even lower cost. H.P. 30, 40, 50 and 75. Can be equipped with one way or reversible Pumping Clutch.

Prices on request.



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"It has not only saved us money on water and oil, but uses so much less water that in case we are drilling in a locality where there is a water shortage it saves shutting down the well. The Franklin Oil Engine has proved to be very economical."

Yours very truly,

(Signed) SHAWVER AND SUTTER
By: Bell

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Yours very truly,
PLATEAU OIL COMPANY
(Signed) C. R. Tyrrell,
Vice President.

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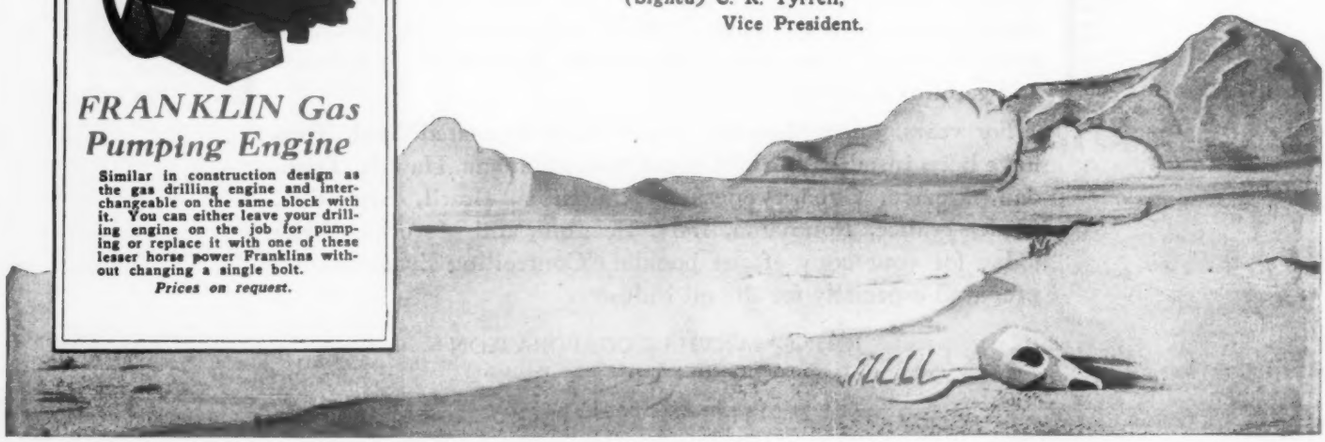
Yours very truly,
(Signed) D. M. SHAWVER
Supt. for Shawver and Sutter.



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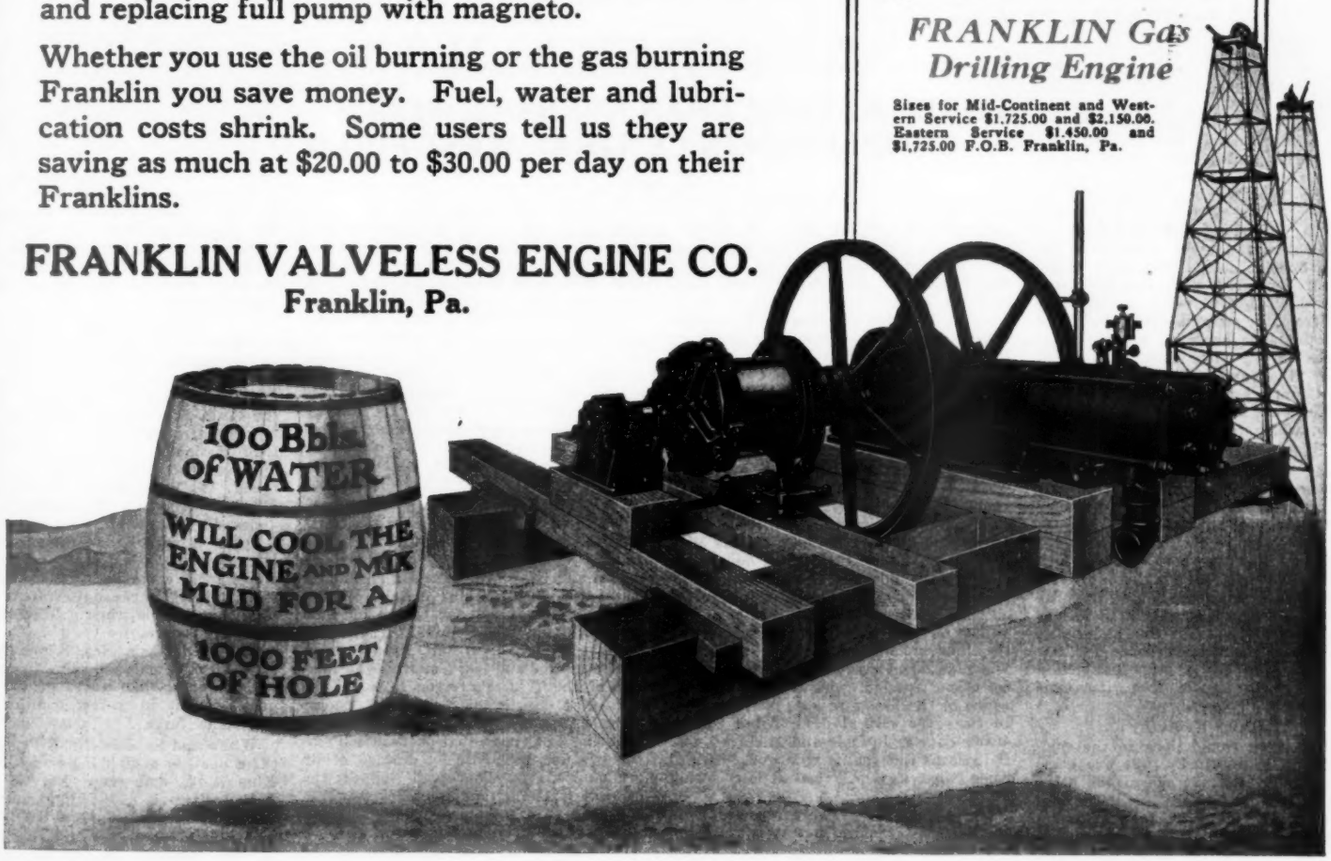

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All Oil Fields

More Activity in Kentucky-Tennessee

Best Well Found in Clark Pool, Near Celina. Production Growing in the Glasgow Field of Barren County

By Whit
Staff Correspondent, Kentucky-Tennessee

GASGOW, Ky., Apr. 23.—Greater activity is noticeable in both Kentucky and Tennessee but the production failed to show up as well as previous weeks when a lesser number of completions were made. The best well of the period was developed in Clay County, Tennessee, where H. Z. Clark's No. 1 K. Thurman farm, in the Clark Pool, near Celina, came in at 240 bbls., from a deeper pay sand at 654 feet, causing quite an excitement among operators and natives in that part of the field. Eight completions in Tennessee showed 10 bbls. more new production than did 37 completions in Kentucky, which is something out of the ordinary for the two States. The big well got its oil in the Modoc sand at 300 feet below the Pencil Cave formation and means that from now on deeper pays will be looked for in the Celina Field.

Production is growing rapidly in the Gasgow Field of Barren County, Kentucky, as the Paragon Development Co. for the past two months ran from this county alone, a total of about 110,000 bbls. of crude and the Stoll Oil Refining Co. for the same period handled through its gathering lines a total of 25,205 bbls. indicating that the old Glasgow Field is getting better from day to day on account of extensions found to the Lecta Pool, south and east of Glasgow.

Nothing startling was developed in Ohio, Daviess and other counties in the western division as the wells were usually small compared with the past several weeks. A few wells are also reported from the eastern division of Kentucky, the best being a 50-bbl. initial producer on the Silas Burnett farm, in District 3, Wayne County, while in Wolfe County, a second test on the Bush farm, District 20, showed an initial of 35 bbls. which is in the Torrent Field.

Pipe Line Completion

James C. Ellis, native operator of Owensboro, Ky., began filling his supply tanks at Taffy, in Ohio County, preparatory to pumping into the big storage tanks on Glenmore Switch, a short distance east of Owensboro, from which it will be drawn off by gravity into river tankers for shipment to Louisville. The line was completed on April 15 as the contract called for. The line and equipment cost in the neighborhood of $200,000. Mr. Ellis has a large production of his own to handle from the Ohio County area.

Eastern Kentucky

Out of seven completions in the eastern portion of Kentucky, but one came in a dry hole, the average of the other six running from 3 to 50 bbls. The best completion was found by John Dil'on in his second test on the Silas Burnett farm, District 3, of the Monticello Field, in Wayne County, which is good for 50 bbls. and one of the best producers found in the county for the past few seasons. This well should bring about a revival of work in the area in which it is located. Wayne County contains a large number of wells that are on the pump and many dry holes have been found but the county is only partly drilled over and other good pools are bound to be found when wildcat work starts in earnest. In District 5, same county, J. C. Blair and others found a dry hole in No. 5 on the J. T. Gregory farm.

In the Torrent Field, of Wolfe County, District 20, Amp Burnett's second test on the John P. Bush farm, is a 35-bbl. pumper, while the Reno Oil Co.'s second test on the E. C. Spencer farm is good for 15 bbls. These two wells are rather large producers for that county of late, but it is practically a new pool recently opened up and others of the same kind are bound to follow.

In Johnson-MaGoffin Counties, in the Big Sandy area, Dora Fairchild's test on the Joseph Wagner farm showed a production of 20 bbls. from the Weir sand.

In Elliott County, on Newton Creek, G. D. Miller, trustee, drilled a test on the Oliver lease that pumped 10 bbls. initial production. This is an exceptionally good pumper for this county and may bring about additional drilling operations. Scouts of the large companies are scouring the State for just such producing areas.

In District 7, Estill County, the Waco Oil Co.'s No. 16 on the A. J. Rawlins farm is reported at 3 bbls. under pump.

Week's Work

A summary of the week's work in the Kentucky-Tennessee fields shows 45 completions, 25 producers with an initial production of 980 bbls.; 20 dry holes and no gas wells.

County—	Comp.	Oil Wells	Prod.	Dry	Gas
Barren	17	7	106	10	0
Ohio	7	4	140	3	0
Daviess	2	1	100	1	0
Warren	2	1	6	1	0
Calhoun	1	0	0	1	0
Hancock	1	0	0	1	0
Wolfe	2	2	50	0	0
Wayne	2	1	50	1	0
Johnson-Magoffin	1	1	20	0	0
Elliott	1	1	10	0	0
Estill	1	1	3	0	0
Total Kentucky	37	19	485	18	0
Total Tennessee	8	6	495	2	0
Total	45	25	980	20	0

Western Kentucky

New development is growing and spreading out of the western division of Kentucky and while weather conditions remain bad the drill keeps moving to locations and drilling is started. The Glasgow Field of Barren County is coming to the front rapidly, owing to the productive extension found to the Lecta Pool, southeast of Glasgow. The past three months have shown a wonderful increase in production in this county, for during March, the peak production was the largest in the history of development in the county. For the month of March, the Paragon Development Co.'s lines handled a total of 54,305.07 bbls. from Barren County and the Stoll Oil Refining Co. 13,104.71 bbls. for a total of 67,409.78 bbls., against the February runs of the same two companies amounting to 53,373.67 bbls., an increase for March of 14,046.11 bbls., while February was the peak month for production until the March figures were available. The peak production of the Illinois Pipe Line Co. for running oil from the western division came about during March, with a total of 226,507.41 bbls., or 32,838.50 more bbls. than for February, and April figures should show a big increase in the entire western division with the new wells that are being brought in from day to day.

It is almost a standoff in new work under way between Ohio and Daviess Counties at this time, but Ohio County has been more thoroughly drilled than Daviess County. The Brown, Haden and Jones Pools in this county are showing some nice producers, similar to the wells found in the Ambrose Pool, in Ohio County, but not in such numbers.

According to report from the 625 producing wells in Ohio, Daviess, Hancock and McLean Counties the production for March reached close to 180,000 bbls., the largest in the history of those counties and over the former peak month of November by close to 15,000 bbls. The largest portion of the oil comes from Ohio County. Owensboro, Hartford and Whitesville are showing the effects of the oil development work, as well as other small hamlets scattered over the producing areas of Ohio, Davies, Hancock and McLean Counties, as vacant houses and business places are a scarcity, while a year or so ago they were plentiful.

Barren County Wells

The Glasgow Field of Barren County is showing its worth after a long period, due to the opening of an extension a few months ago to the Lecta Pool, on the C. B. Jones farm, where wells were found that swelled the production of the field far above what it ever has been and excellent results were obtained on the J. W. Pace, Pedigo, Nichols, Glass, Morton farms in the vicinity of the Jones discovery well.

Quite a surprise was met when the Sampson Oil Co.'s No. 14 on the C. B Jones farm came in a rank duster, but these things happen quite often, but are hardly noticeable when a lease has other good production.

Wood Oil Co.'s Nos. 8 and 9 J. W. Pace farm, same pool, came in at 5 bbls. each, nothing like some of the earlier ones brought in a few months ago on the same farm.

White and Sandals' No. 3 Pedigo farm, same pool, is a 40-bbl. pumper from the Blue sand, and their No. 26 on the Nichols farm is a 10-bbl. pumper.

Esslinger Oil Co.'s No. 8 Glass farm is a 40-bbl. pumper while Nos 1 and 2 of this company on the L. S. Morton farm are 3-bbl. pumpers.

Sandals and others' Nos. 1 and 2 Shirley farm are dry holes. J. W. Porter and others' Nos. 1 and 2 Thomas Wheeler farm are dry. A. W. Ziegler has two dry ones in Nos. 2 and 3 J. E. Bray farm. R. B. Tyler's No. 1 Buck Clark farm is a duster. Norris Brothers & Warder got one of the same kind at a test on the Tucker farm, and Frazier, Cosch & Painter could do no better when their test on the J. H. Vance farm failed to make a producer.

Ohio County Wells

In the Kel'ey Pool, in Ohio County,

(Continued on Page 176)

THREE BETTER THAN AVERAGE WELLS COMPLETED IN CENTRAL WEST FIELD

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Apr. 23.—Three wells in the Central West Field attracted some interest of the producing industry: The finding of a natural flowing well, good for 70 bbls. initial, on the J. Jones farm, Section 19, Washington Township, Gibson County, in southwestern Indiana; the completion of what looks good for 50 bbls or better was made on the Charles J. Pond farm in Olmstead Township, Cuyahoga County, in the Cleveland Field, of the Central Ohio belt, and a third in the Lima Field, north of Tiffin in Seneca County, on the Sendelbach farm, Section 29, Liberty Township, showing for better than 50 bbls. initial.

Wells of the capacity of these three are scarce in the old fields at this time and there is very little work doing outside of the Central Ohio Field and that is more quiet than usual, owing to inclement weather conditions that have prevailed for the past few weeks. Across the line in Monroe County, Michigan, where so much leasing has been going on for a short period, work is lagging on account of the heavy winds that have been in force for several days, doing considerable damage in Ohio and Michigan, and it looks as though the new work planned some time ago will get a late spring start.

Three completions were reported from the old Lima Field of northwestern Ohio, the outstanding one being a test drilled by L. G. O'Brien on the Joseph Sendelbach farm, Section 29, Liberty Township, Seneca County, and a few miles north of Tiffin, in an area where leasing has been active since early in the fall. This well filled up shortly after the top of the pay was touched and having quite a heavy gas pressure spraying oil which covered a large area around the well on account of a strong wind, but the fire in the boiler was put out without any damage. While trying to tube the well it made work hard by its boiling over. What the well will make is yet unknown, but it looks better than the last well recently drilled in the same township, on the Kimmett farm, which had an initial natural production of 70 bbls., and is still reported holding at 50 bbls. daily. The two good wells, quite a distance apart and in the same township, make the average operator believe that a field of consequence is destined to be opened up, although the drilling is much deeper than in Wood, Sandusky and other counties of the Lima Field. Three other wells are due for completion. J. H. Murphy & Son's No. 4 Dave Hunker farm, Section 21; same firm's No. 1 John Swartzmiller farm, Section 28, and Duncan, Ross and others' No. 1 Dora Brubaker farm, Section 29.

While there have been more than 20,000 wells drilled in Wood County in the Lima Field, the county is only partially drilled and there are chances for commercial producers within defined limits. Clark A. Browning, one of the old-time operators in Wood County, has just brought in his No. 20 well, 100 feet from the north line and 600 feet from the west line of the T. J. Patterson farm, in the northwest quarter of Section 18, Bloom Township, near the big tank farm and southeast of Cygnet, that proves the Trenton has not been entirely drained of its crude product. This well topped the sand at 1,117 feet and went 247 feet into the sand to a total depth of 1,364 feet, showing an initial production of 40 bbls. This well is on what is known as the "Sucker Rod or Hogs Back" anticline that has produced some enormous gushers in past years.

A test drilled by the Ohio Oil Co. in the northwest corner of the M. A. and R. A. Dapore, in NE Section 2, Laramie Township, Shelby County, proved a duster. Sand was topped at 1,230 feet and water encountered at 97 feet in the sand with only a rainbow showing.

Indiana Field

Three wells were completed in Indiana, the one of most interest being a test drilled by the Big Four Oil & Gas Co., in the northeast corner of the J. Jones

(Continued on Page 176)

8" GAS GATHERING LINE
To Gasoline Plant.
Magnolia Petroleum Company
St. Louis, Okla.

Simple!

Speedy!

This Line is Permanently LEAK-PROOF because it is VICTAULIC-Coupled!

The photograph shows how simple a matter it is to connect pipe the Victaulic way. Set the leak-proof ring in place, seat the two half housings in the grooved ends, tighten with a speed wrench—and the job is done—in less than two minutes! Unskilled labor can install the line with a wrench as the only tool—Victaulic Couplings will not go together wrongly.

To this speed and ease of installation, add the further advantages of permanent leak-proof connections, unaffected by contraction, expansion, bends due to broken ground, water or weather—and you have a few of the reasons why many of the largest pipe line operators in the Oil and Gas Industry specify VICTAULIC COUPLINGS for every joint in the line. Victaulic Couplings are supplied for all pressures, and all sizes of steel, wrought iron and cast iron pipe.

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The all-purpose pipe coupling

"For every joint on the line"

Perry County, Ohio, Has Good Wells

One Completed for 340 Bbls., Others 250, 240, 225, 175 and 170 Bbls. Light Pumpers and Gassers in Other Districts

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Apr. 24.—Since the Eastern fields were last reviewed there were fewer wells completed but the size of a number in the deep sand territory in southeast Ohio in part compensated for the completion of quite a number of light pumpers and dry holes. Section 21, Harrison Township, furnished all of the good producers. Both West Virginia and southeast Pennsylvania completed nothing out of the ordinary.

The completions in Perry County had an initial production greater than for any one week in a number of years. The pool in Perry County is small and confined almost exclusively to the northwest quarter of Harrison Township and the wells drilled in are located on lots, small in size, and the wells not likely to hold up for any considerable time. In the section named the Hill Top Oil Co. completed a test on the Retta-Hankison lot and it flowed 340 bbls. the first 24 hours after completed and shot in the Clinton sand.

The Wittmer Oil & Gas Properties Co. completed a test on the William Kester lot. It flowed 250 bbls. the first 24 hours. Johnson, Matthews and others got a producer that placed 225 bbls. to its credit, on the H. J. Tysinger farm.

The Wehrle Co. completed a test on the Carrie Worthington lot and it produced 175 bbls. the first 24 hours. The same company completed a test on the George McClelland lot. The well flowed 170 bbls. the first 24 hours. The Wittmer Properties got a 25-bbl. producer on the M. Young lot.

In the southwest quarter of Section 21, Scott Howell and others have completed and shot in the Clinton sand a test on the Burley-Winter farm. The well flowed 240 bbls. the first 24 hours. The total depth of the well is 3,495 feet and it is the best producer so far completed in the southwest quarter of Section 21. Nearly all previous completions are located in the northwest quarter of the same section.

The southeast Ohio fields outside of completing the good producers in Perry County, dropped to almost total failures in other districts. In Knox Township, Jefferson County, Henaghan & Hanlon completed and shot in the Berea grit No. 10 on the Joseph W. Edmiston farm. It is a very light pumper in that formation.

Medina County

In Lot 7, Section 10, Chatham Township, Medina County, Johnson & McGrath completed No. 3 on the Leah A. and Silva E. Brinker farm. It is a duster at a total depth of 315 feet. The cost to drill in this county is small compared to the cost in the deep sand territory in a number of counties farther south.

Athens County

In Section 24, Marion Township, Athens County, Charles Woodyard and others have a duster in the first Cow Run sand at No. 5 on the Charles Woodyard farm. In Rome Township, C. O. Dunn had the same luck at No. 17 on the A. G. Finsterwald farm. No. 18 on the same farm has been completed and is a light pumper in the first Cow Run sand. In Ames Township, Charles Fox and others are drilling a test on the N. E. Dean farm.

Meigs County

In the west part of Subsection 23, the Coal Hollow Oil & Gas Co. has completed in the Berea grit No. 5 on the R. T. and R. H. Burdette farm and is a 3-bbl. pumper. This well was drilled in last year and reported a gasser in the Macksburg 500-foot sand and has just been drilled down to the Berea grit. In the same township, Frank Leifheit and others have completed a test on the Henry Reuter farm. It is a light gasser in the first Cow Run sand.

Dry Holes

On Reynolds Run, Section 19, Independence Township, Washington County, the Henderson Oil Co. and others have completed in the Big Injun sand a test on the Jacob Berga farm and it is so light as to scarcely pay to operate it. On Sheets Run, Grandview Township, same county, McMahan & Shanklin Brothers have a duster in the Big Injun sand at No. 4 on the McMahan Brothers farm. At the head waters of the same stream, same township, J. T. Knowlton and others had the same luck at No. 5 on the R. E. Meyers farm.

Starting Tests

In Hardy Township, Holmes County, Palmer & Gisinger have a rig up on the George Schuler farm. The East Ohio Gas Co. has started to drill on the Samuel Franks farm. In Perry Township, Licking County, Penyz & Hulse are drilling a test on the James Chaney farm. In Knox Township, Hall & Co are due in the sand on the Kaylor heirs' farm. In Hopewell Township, the Flint Ridge Oil & Gas Co. has a rig up on the A. E. Armstrong farm.

West Virginia

The West Virginia and Southwest Pennsylvania fields had nothing of importance to offer in late completions.

At the mouth of Tanners Creek, DeKalb district, Gilmer County, Harley Satterfield and others have drilled a second test on the J. F. Gainer heirs' farm through the Big Injun sand. It is a duster.

On the Little Kanawha River, same district and county, Blaine Engle and others have completed in the Big Injun sand a test on the M. Davis farm. It is a light gasser, 250 feet northeast of S. G. Roberts' test on the Doctor Blake farm.

Ritchie County

On Indian Creek, Murphy district, Ritchie County, the Maxon Oil Co.'s second test on the E. C. Parks farm, drilled through the Big Injun sand and reported a duster, has been filled up to and shot in the Maxon sand and is showing for a light pumper. In the same district, J. G. Cochran and others are rigging up on the J G. Cochran farm. In McKim district, Pleasants County, S. Powell & Co. are fishing at 1,730 feet on the A. W. Powell farm. In Murphy district, Ritchie County, the Hope Natural Gas Co.'s location on the Ina Ayers farm is held up.

On McFarlin Creek, Murphy district, Ritchie County, the Hope Construction & Refining Co. has completed in the Big Injun sand its old test on the Sidney Jordan farm. It is a duster in the lower formation. In the same district, on Lowther Run, J. G. Cochran has started to drill a second test on his own farm.

Doddridge County

Located 500 feet northeast of its first test on the William Coleman farm, the Murphy Oil Co. has completed No. 3. It is a duster and has been abandoned. On Barnes Run, Lee district, Calhoun County, M F. Crowlet has completed a test on the L. A. Sturms farm. It is a gasser in the Big Injun sand good for 750,000 feet.

Pleasants County

In Grant district, Pleasants County, Swingle Brothers have completed in the Big Injun sand a second test on the R. T. Holdren farm. It is dry and abandoned. In the same district, E C. Hartman is drilling on the Hammett heirs' farm.

In Bannister Hollow, Elk district, Kanawha County, the South Penn Oil Co. has reclaimed old No. 11 on the Bannister heirs' farm and it is a very light pumper in the Squaw sand. The same company has reclaimed No. 7 on the same farm. It is also a very light pumper in the Squaw sand.

In Mannington district, Marion County, the Carnegie Natural Gas Co after drilling deeper its No. 3 on the Ambrose Hayhurst farm has a light gasser in the Gordon sand.

In Murphy district, Ritchie County, Captain Davis & Co. have completed in the Big Injun sand a second test on the Asa Flesher farm. It is a gasser. In the same district, the West Fork Oil Co.'s No. 3 on the Helena C. Andrews farm is a 4-bbl. pumper in the Maxon sand.

Deep Gasser in Lewis County

In Hackers Creek district, Lewis County, the Jane Lew Gas Co. has a gasser in the Benson sand at a test on the S. R. Propet farm. In DeKalb district, Gilmer County, Satterfield & Co.'s second test on the F. H. Gardner farm is a duster

Calhoun County

In Center district, Calhoun County, W. H. Bickel's second test on the D. H. Dennis heirs' farm is a duster in the Big Injun sand. In the same district, the Hope Natural Gas Co. has a gasser in the Keener sand on the A. Hardman farm. In Center district, W. H. Bickel has a gasser in the Big Injun sand at a test on the Morris-Marshall farm.

In Grant district, Cabell County, H. C. Zogg & Co. completed a second test on the T. C and Florence Vance farm. It is a gasser in the Big Injun sand.

Wetzel County

In Church district, Wetzel County, the Manufacturers Light & Heat Co. drilled a test on its own property through all sands and it is dry and abandoned. In Center district, the Carnegie Natural Gas

(Continued on Page 127)

GOVERNMENT IN BUSINESS DANGER TO LIBERTY DECLARES PRESIDENT

The conduct of business should be left to private individual, where it belongs, rather than unloaded on the government, and the rights of individual states should always be scrupulously regarded, said President Coolidge in an address before the Society of the Daughters of the American Revolution, at their annual convention in Washington.

Pointing out that the country to some extent tends to depart from the ideals of local self-government, President Coolidge said:

"We are especially prone to call on the national government to take over our burdens, and with them our freedom.

"Through regulations and commissions we have given the most arbitrary authority over our actions and our property into the hands of a few men. Some of this has been necessary to prevent those who are strong. But it is a procedure fraught with considerable danger and should only be adopted as a last resort.

"There is one field, however, which belongs to the people, upon which they have uniformly insisted that the Federal Government should not trespass. That is the domain of private business.

"Society requires certain public activities, like highways and drainage, which are used in common and can best be provided by the government. But in general the country is best served through the competition of private enterprise

"If the people are to remain politically free, they must be economically free. Their only hope in that direction is for them to keep their own business in their own hands.

"Our theory of society rests on a higher level than communism. We want the people to be the owners of their property in their own right.

"We recognize that they are all capitalists by nature. We want them to be all capitalists in fact.

"That result is being approached rapidly. Our system is demonstrated by practice that it works.

"The theories which are advanced to entice the people into handing their private affairs over to the government do not take into account all the facts The fundamental characteristics of humanity are not going to be changed by substituting government action for private enterprise. The individual who manages the one, with all his imperfections and his selfishness, will have to be employed to manage the other.

"The very essence of business is the expectation of a profit on the part of those who conduct it. Government is conducted from an entirely different motive.

"When business is in private hands, it is expected to be run for the benefit of the owners. When the government steps in, the purchasers, users and beneficiaries of what the government undertakes to supply insist that the concern should be conducted for their benefit.

"It does not eliminate selfishness; it simply transfers it in part from the seller to the purchaser. Under these conditions it ceases to be a real business, becomes lacking in enterprise and initiative, and does not have any motive to provide improved service.

"Flowing out of these unavoidable conditions, if the government gets into business on large scale, we soon find that the beneficiaries attempt to play a large part in the control. While in theory it is to serve the public, in practice it will be very largely serving private interests

"It comes to be regarded as a species of government favor and those who are the most adroit get the larger part of it. Men in public life are besought to secure places of employment for some persons in their locality and favorable contracts for others.

"The situation rapidly develops into a position of intrenched selfishness, where a great body of public employes and large interests are in virtual control, with the general public paying a high cost for poor service. With all the care that it is possible to exercise, a situation of this kind becomes entangled in favoritism and is always in great danger of causing corruption and scandal.

"If it is desirable to protect the people in their freedom and independence, if it is desirable to avoid the blighting effects of monopoly supported by the money of the taxpayer, if it is desirable to prevent the existence of a privileged class, if it is desirable to shield public officials from the influence of propaganda and the acute pressure of intrenched selfishness, if it is desirable to keep the government unencumbered and clean, with an eye single to public service, we shall leave the conduct of our private business with the individual, where it belongs, and not undertake to unload it on the government."

30 Years of Progress

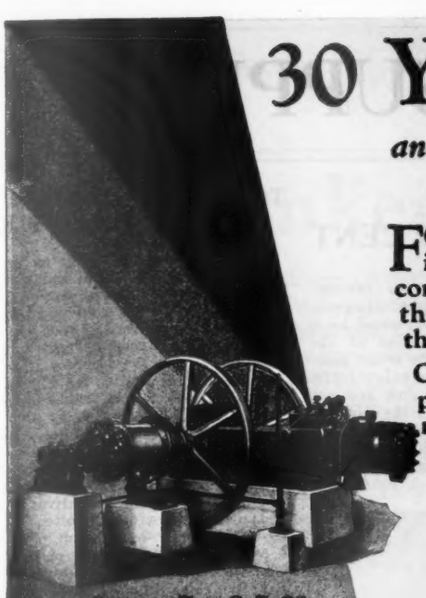
and still leading in specialized power equipment for the Oil Industry

FOR 30 years Bessemer has been specializing in power equipment for the Oil Industry—constantly improving and pioneering to meet the ever-changing operating conditions throughout the world's oil fields.

Old types of equipment have been improved to the nearest attainable point to mechanical perfection; new equipment has been developed and perfected to meet new needs; and each product in the Bessemer line has earned its position of leadership solely on its merits in competitive service.

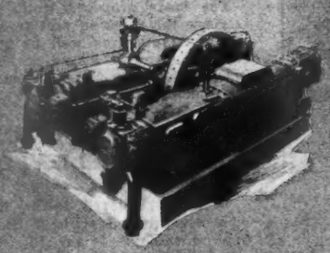
After three decades of unceasing progress, Bessemers continue to stand out as by far the greatest value in oil field power equipment—living up to their truthful slogan, "You buy the best when you buy a Bessemer."

THE BESSEMER GAS ENGINE COMPANY
52 York Street ∴ ∴ Grove City, Pa.

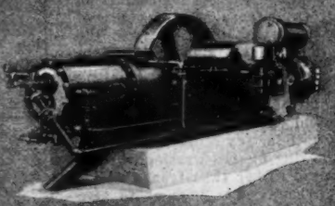


Bessemer Type O. F. Oil Field Engine

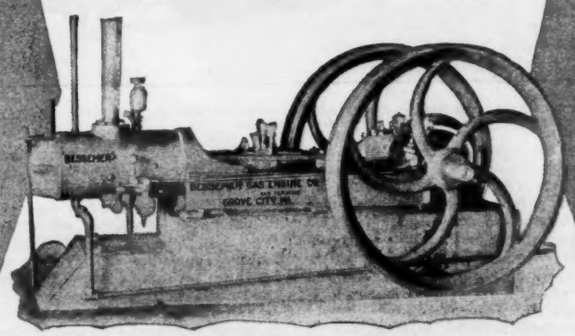
Bessemer Four-Cycle Oil Field Engine



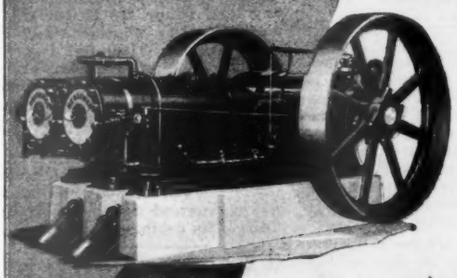
Bessemer Four-Cycle Compressor

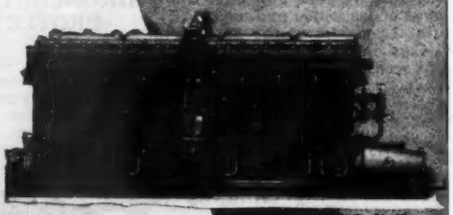


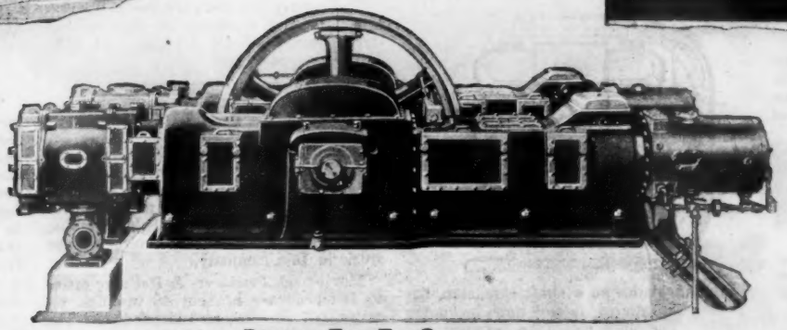
Bessemer Type Ten equipped with Gas Economiser and 8 A-2 Cylinder



Thirty years ago the first Bessemer Oil Field Engine, pictured above, entered service in the oil fields of Pennsylvania. Today over a million and a quarter horsepower of Bessemer equipment is in service the world over.







Bessemer Type Ten Compressor—greatest value in the compressor field

BESSEMER

EQUIPMENT AND SUPPLIES

DREDGING EQUIPMENT NOW PRODUCING SAND

The experience of Wood Brothers Construction Co. of Kansas City in sand dredging with Amsco centrifugal pumps, supplied by the American Manganese Steel Co., is interesting. A 12-inch type "H" Amsco unit has been giving service on No. 4 dredge for three years and a 10-inch pump, also type H, has recently been added to the equipment of the Kansas City plant.

Three years ago this company took a contract to fill in a tract along the Missouri River, part of a levee undertaking, with material dredged from the river bed. The field conditions—a maximum lift of 25 feet and a maximum length of 12-inch pipe line of 1,100 to 1,200 feet—indicated the type and size of pump and the 12-inch pump was purchased.

At the completion of the project the company determined to utilize the dredging equipment for commercial production of sand and erected a tipple for handling, screening and loading out the product to cars.

The lift, however, was increased to between 55 and 60 feet and the pipe line had to be extended, resulting in such a reduction of output that a revision of plan was necessary. The pump and driving motor had been selected for conditions so different from those now encountered that it appeared wise to pump from the river to sump and to relay the sand to the tipple by means of a second pump of smaller size.

This permitted (1) reducing the head on the original pump to that on which it could show satisfactory economy and output, (2) allowing for the wasting of fines from the sump rather than from the tipple whose capacity was such as to give more efficient operation on a reduced pumpage, and (3) effecting an economy in power due to lifting the initial water only to the level of the sump and a much smaller volume to the tipple.

JOHN METZINGER PROMOTED

J. C. Metzinger, of the Shippers' Car Line Corp., has been promoted to the position of superintendent car maintenance in that organization, with headquarters at 30 Church Street, New York. He will be in charge of inspection and upkeep of all cars in the service of the Shippers' Car Line Corp. Many tank car users and others will remember John Metzinger as the assistant superintendent for many years of the Milton, Pa., plant of the American Car & Foundry Co., and later as superintendent of the Milton plant of the Shippers' Car Line Corp.

READING CO. MAKES CHANGES

Wallace McCausland, district sales manager of the Reading Steel Casting Co. in Pittsburgh for years, has been transferred to Bridgeport, Conn., as assistant to the general manager of sales.

A. W. Taggart, for three years district sales manager in Chicago for the company and previous to that a salesman attached to the Pittsburgh office, has been returned to Pittsburgh to assume the district sales managership there.

Walter E. Foster, who had headquarters at the Bridgeport office as sales engineer, is transferred to the Chicago office to become district sales manager.

TANK VAPOR CONTROLS PLACED

An elaborate installation of tank vapor controls is being made at the Athens tank farm operated by the General Petroleum Corp. in California. The work is in charge of J. A. Campbell, natural gas engineer.

MAGNET INCREASES RAPIDITY OF UNLOADING PIPE 60 PER CENT

An increase of 60 per cent in speed in unloading pipe is testified to by the East Ohio Gas Co., Cleveland, Ohio, through the use of a magnet in connection with its Universal truck crane. All pipe is unloaded, stacked, rehandled and loaded with a 230 V. pipe type of magnet 22 inches in diameter. It is asserted that the following unloading speeds are the average for the combined crane and magnet unit: 1½ to 2-inch pipe, 3 hours per car; 3 to 4-inch pipe, 2 hours per car; 6 to 8-inch pipe, 1½ hours per car; 10-inch and over, 1 hour per car.

Besides the greater speed in unloading the company found it could do without two men formerly needed in handling 1½-inch to 4-inch pipe and without four men previously required in handling 6 to 18-inch pipe. Another item was the decreased spoilage of pipe resulting from ruining the threads or warping.

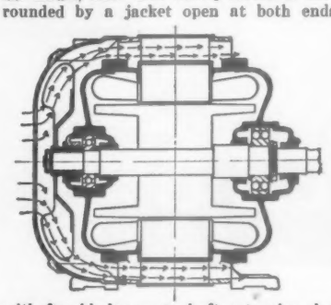
As in many railroad installations of Universal cranes mounted on railroad flat car mountings and magnet equipped, the magnet on this unit is excited by a generator mounted in the rear of the crane cab and driven by the crane gasoline motor, thus keeping the entire outfit as a completely contained unit and not detracting in any way from the mobility of the motor truck mounted crane.

In addition to handling yard work with the magnet, the magnet can be quickly detached and the hook block substituted for field work such as laying pipe; or a clamshell bucket can be added for excavating or handling material. On this last class of work the company reports ability to unload a 50-ton car of soft coal in 1 to 1½ hours with clamshell bucket. Mobile crane units of this type are built by the Universal Crane Co., Cleveland, Ohio, and suitable magnets for truck crane units are built by the Electric Controller and Magnet Co., also of Cleveland.

A 22-inch magnet is doing the lifting while a workman has the relatively simple job of guiding the pipe.

AIR-JACKETED MOTOR PROTECTED FROM DIRT

An air-jacketed motor for serving where dust, fumes, moisture are present in sufficient quantities to necessitate protection to motor and property has been developed by the Wagner Electric Corp., St. Louis, Mo. The entire motor is surrounded by a jacket open at both ends



with fan blades on a shaft extension, between the sealed motor and its outer jacket. The only clearance between rotating and stationary parts of the motor is in the bearing housing, and here no impurities can get past the grease packing.

The motors are new in external construction only, no changes having been made in the electrical principles of the motors themselves. The frame housing, the motor proper and all bearings are substantially air-tight. The end shield is made of cast iron, rib-reinforced and has a substantial grating which protects the fan and provides an opening for incoming ventilating air. The center shield is made of heavy sheet steel held in place by slot head bolts. The fan is of one-piece construction. The conduit box is mountable in four positions.

The motors are designed for a temperature rise not to exceed 50 degrees centigrade and meet all A.I.E.E. and N.E.L.A. standards.

MOVED TO INDEPENDENCE

Producers & Refiners Corp. has moved its general office from Denver, Colo., to Independence, Kans. It now occupies the newly completed addition to the office building of the Prairie Oil & Gas Co., which owns the controlling interest of the stock in this company.

Moving the Producers & Refiners office to Independence brought 48 families, totaling 167 persons, to Independence. The Chamber of Commerce of Independence promoted the building of 45 new homes in the city. The Denver office in the future will consist of a district sales headquarters with L. U. Wagner in charge. This office will be located in the Patterson Building. Branch offices are also maintained in Denver, Tulsa, Salt Lake City, Memphis and Omaha.

TO FIGHT RAISE IN PIPE FREIGHT RATE

An all-southwestern fight on increases in freight rates on iron and steel pipe was assured at the closing session in San Antonio, Tex., of a conference between shippers and receivers of such pipe, traffic experts from several states and manufacturers from the East.

A steering committee for a hearing before the Interstate Commerce Commission, the date to be set by that body, was appointed by the conference. It consists of C. H. Campbell, of Dallas, Tex., chairman; C. C. Krueger, of San Antonio, Tex., and J. L. Burke, of Tulsa.

There were 38 representatives of Southwestern shippers and receivers of steel, cast iron and wrought-iron pipe at the conference. Manufacturers of Pittsburgh, Pa., who are interested because they believe the rates proposed by the Interstate Commerce Commission will affect their sales and distribution, also attended.

The conference and plans outlined are in opposition to increases in rates on iron and steel pipe proposed in the all-Southwestern case, putting pipe on the same rate basis as other iron and steel products.

The basis proposed would materially increase the rates on pipe from midwestern distributors as well as manufacturers to Southwest Texas dealers, according to Chairman Campbell of the steering committee.

NEW RECORD FOR DEEP HOLE BELIEVED MADE

What is believed to be the deepest well ever drilled with a Star No. 28 drilling machine is the Big Six well, 2 miles west of Moab, Utah, on the bank of the Colorado River. This hole, bottomed at 5,345 feet, is being abandoned, preparatory to moving the rig.

From around 2,000 feet to 5,345 feet the well has been drilled by John A. Tannehill. A well of that depth is considered a good record for a heavy standard rig.

From 2,870 feet to 5,345 feet, the well was financed by the Embar Oil Co. of Salt Lake City, of which Jacob Dorr is president. For 3,000 feet it penetrated massive beds of petroliferous shales, and is bottomed in sandy shale. It became evident that the well was not properly located structurally, and for this reason it was decided to abandon it.

The big Six well was drilled at a cost of approximately $70,000. It is not only one of the deepest wells in Utah, but its cost is regarded as remarkably low considering its depth.

WAUKESHA MOTOR CO. HAS NEW GAS MIXER

"Gaspower" is the trade name of the new automatic compensating gas mixer for internal combustion engines, which is being made and marketed by the Waukesha Motor Co. of Waukesha, Wis. The device was created to meet the demand for a reliable gas proportioning method in the oil industry. Much of the power that is used in the production of oil is from natural gas. The gas engine offers a simple means of converting this abundant, cheap fuel into efficient power.

According to the manufacturer, Gaspower offers great responsiveness instantly and automatically proportioning the fuel and air at every change of speed or load; high economy because of perfect mixtures over a wide range of demands; elimination of volume tank, substituting a sensitive regulator; no hair trigger adjustments continually required, and its best operation requires low gas pressures.

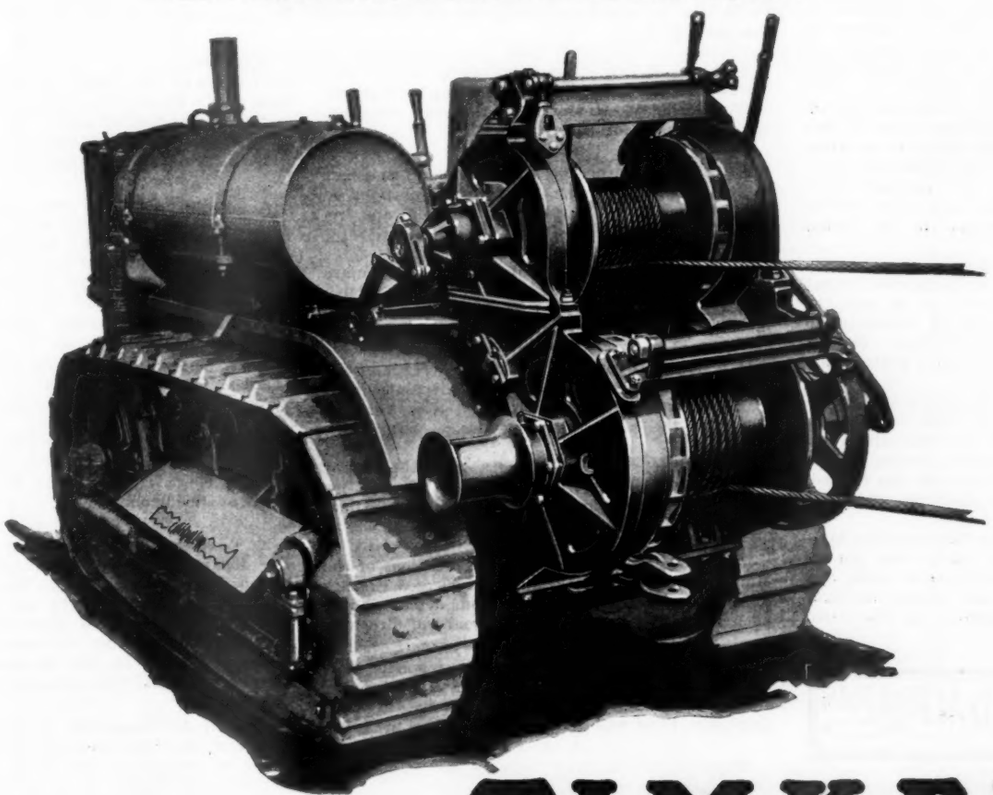
Timken Hoisting Saves

Modern oil field equipment of every type is built around Timken Bearings. Like the "Caterpillar" tractor to which it is applied, the Willamette Tractor Hoist is thoroughly Timken-equipped. In this successful portable hoist Timken Bearings are used on the drive shaft, on the power take-off drive, on the hoist drive shaft, on the upper drum shaft, and on the lower drum shaft.

The variety of Timken applications and the versatile service expected of these hoists bring out the full superiority of Timken Bearings. They not only save power and lubricant by overcoming all possible friction, but they resist all the wear of heavy thrust, shock and radial loads. Only Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS*, and Timken electric furnace steel make it possible.

This is the exclusive Timken combination which means permanently protected alignment and the elimination of most repair expense in any machinery. That is why Timken Bearings are more widely used in the oil fields than all other anti-friction makes combined.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO



TIMKEN
Tapered
ROLLER BEARINGS

MEN KNOWN IN OILDOM

Glen M. Ruby

Glen M. Ruby, now in charge of the Hudson's Bay-Marland Oil Company's operations in western Canada, is widely known among oil operators in the Canadian and American West. A native of Appanoose County, Iowa, he received his early education in the public schools of Seymour, Iowa. He entered the University of Nebraska in 1909, and after intermittent attendance graduated in 1916. He was active in athletics and from 1910 to 1912 held the lightweight and middleweight wrestling championship of the Western Intercollegiate Association. At the university he gave especial attention to engineering and geology, and before graduation had spent two field seasons in the United States Geological Survey.

After graduation Mr. Ruby went to work for the Empire Gas & Fuel Company, in Bartlesville, Okla., as field geologist. The following year he was put in charge of its work in the Rocky Mountain region, with headquarters in Denver, Colo. He left the Empire company to join the United States army in 1918.

After the war, Mr. Ruby resumed work as petroleum geologist, from 1920 to 1924, maintaining a consulting office in Denver and specializing in the geology of the Rocky Mountain region. When the Marland Oil Company of Colorado was formed, he took the position of chief geologist with that organization.

Upon the organization of the Hudson's Bay-Marland Oil Company, Ltd., Mr. Ruby was put in charge of the preliminary investigation work and later became vice president and general manager of the company with headquarters in Edmonton, Alberta.

PERSONAL PARAGRAPHS

K. L. McHenry, of Tulsa, has left for Maracaibo, Venezuela.

* * *

John S. Worden, of Tulsa, is now located at Port Arthur, Tex.

* * *

E. W. Freeman has removed from Tulsa to Wichita Falls, Tex.

* * *

William J. Millard, formerly with Trinidad Oil Fields, Inc., is now in Venezuela.

* * *

Capt. J. W. Flanagan, president of the Andian National Corp., is in Bogota, Colombia.

* * *

A. M. McQueen, vice president of the International Petroleum Company, has returned from Colombia.

Louis Roark and W. A. Burris have opened consulting geological offices at Okmulgee, Okla.

* * *

Forrest E. Gilmore, vice president of the Forrest E. Gilmore Company, is on a business trip to Los Angeles, Calif.

* * *

E. C. Spelman has returned to New York after six years service with The Texas Company (South America), Ltd.

* * *

Clark Kountz, vice president of the Prairie Pipe Line Company of Independence, Kans., paid a visit to Tulsa last week.

* * *

Dilworth S. Hager, formerly chief geologist for the Vacuum Oil Company, has resigned to engage in consulting work.

* * *

J. H. Jenkins, representative of the Tide Water Oil Company, is in the Maracaibo Basin making a report on the Venezuelan oil fields.

* * *

Thomas P. Hanigan, of the Prairie Oil & Gas Company, left Tulsa last week to attend the funeral of his father in Pennsylvania.

* * *

W. L. Connelly, vice president and general manager of Mammoth Oil Company, will make a South American trip soon accompanied by his son, Harry.

* * *

F. W. Crawford, vice president of the Columbia Gas & Electric Company, has returned to his office in Pittsburgh, Pa., after spending three months abroad.

* * *

R. S. Knappen has been transferred from the general office of the Gulf Oil Companies at Pittsburgh, Pa., to the headquarters of the Gypsy Oil Company at Tulsa.

* * *

T. S. Cooke, has assumed charge of refinery operations of the Standard Oil Company of Indiana, in Venezuela. W. E. Morris, of the same company, has been there for some time.

* * *

M. L. Witherup has been made general manager of the Atlantic Refining Company's operations in Venezuela. W. P. Taylor has resigned and returned to the United States.

* * *

A. C. Holmes, traffic manager of the Empire Oil & Refining Company, has returned from a business trip which has taken him to various points in Ohio, Tennessee and Missouri.

* * *

D. J. Moran, vice president and general manager of The Texas Company production department, is in Texas from his headquarters in New York on a tour of the company's properties.

* * *

F. E. Hurley, of Findlay, Ohio, vice president of the Ohio Oil Company, recently underwent a major operation at the Mayo clinic at Rochester, Minn. He was operated on by Doctor William Mayo.

* * *

R. S. Field has been elected vice president of the Midway Northern Oil Company to succeed Charles A. Cole, who recently retired from active service but will remain a member of the board of directors.

* * *

George Potts, of the Kerotest Manufacturing Corporation of Pittsburgh, Pa., makers of Kerotest valves, is making a periodical visit to the Mid-Continent Field and spending some time in Tulsa.

* * *

Alfred A. Foote, chief engineer for the Rycade Oil Corporation at Houston, Tex., has been spending the past several weeks at the company's new field on Bayou Boullion, St. Martins Parish, Louisiana.

* * *

Merrill Davis, general manager of the Dresser Coupling Company of Bradford, Pa., is making a tour of the Mid-Continent fields, visiting Bartlesville and Tulsa in Oklahoma, and traveling south to Texas.

* * *

H. S. Tims, of Calgary, manager of the Canadian Western Natural Gas, Light, Heat & Power Company, has been appointed comptroller of the Mid-West Utilities, Ltd., a subsidiary of the International Utilities Corporation, which operates electric light plants at various points in the western provinces.

Carl A. Young, director of standardization and also secretary of the Development and Production Engineering division, American Petroleum Institute, has returned to his Dallas, Tex., office after a trip through California.

* * *

George G. Allen, recently elected a director of The Texas Corporation and of The Texas Company, is deputy chairman and a director of the British-American Tobacco Company, and a director of the Guaranty Trust Company of New York.

* * *

Robert Armitage, of the Smith Separator Company, Tulsa, sales force, and Thomas G. Laney, research engineer of the Fisher Governor Company, of Marshalltown, Iowa, attended the annual meter conference held this week at Norman, Okla.

* * *

O. D. Donnell, president of the Ohio Oil Company, spent several days last week in Shreveport, La., and in going over the company's properties in that division, particularly with reference to the new development in Champagnolle and Cotton Valley.

* * *

Jay H. Crawford, who has been with the Cities Service Company for 10 years, and since June, 1925, in the capacity of new business manager at Arkansas City, Kans., has been advanced to general manager of the Arkansas Valley Gas Company, succeeding Oscar B. Seyster.

* * *

A. C. Jamison, field superintendent for the Arkansas Fuel Oil Company, at Bradley, Ark., has returned to Bradley from Aberdeen, Miss. Paul Elliott, of Shreveport, La., has gone to Aberdeen, Miss., where the company is drilling with The Texas Company, to take his place.

* * *

C. A. Stevens, title clerk in the Mid-Continent land office of the Prairie Oil & Gas Company, has been made cashier succeeding Keith Crouse, promoted to be district agent with headquarters at Roswell, N. Mex. Mr. Crouse is succeeding Ernest Sidwell, made district agent for California.

* * *

A. T. Junk, for three years assistant purchasing agent for the Continental Oil Company, has been promoted to head of the department for the Continental Oil Company of Texas. Mr. Junk succeeds Charles Prichard, who has been transferred to Denver, Colo., as the head of the Continental company's general purchasing department.

* * *

J. C. Watkins, sales manager for the Root Refineries, Inc., of Shreveport, La., has resigned on account of ill health and returned to his home in Texas for a needed vacation. He has been succeeded by H. Cannon, formerly in business for himself and with the Crystal Oil Refining Company, at Shreveport, and with the Keen & Woolf Company at Beaumont, Tex.

* * *

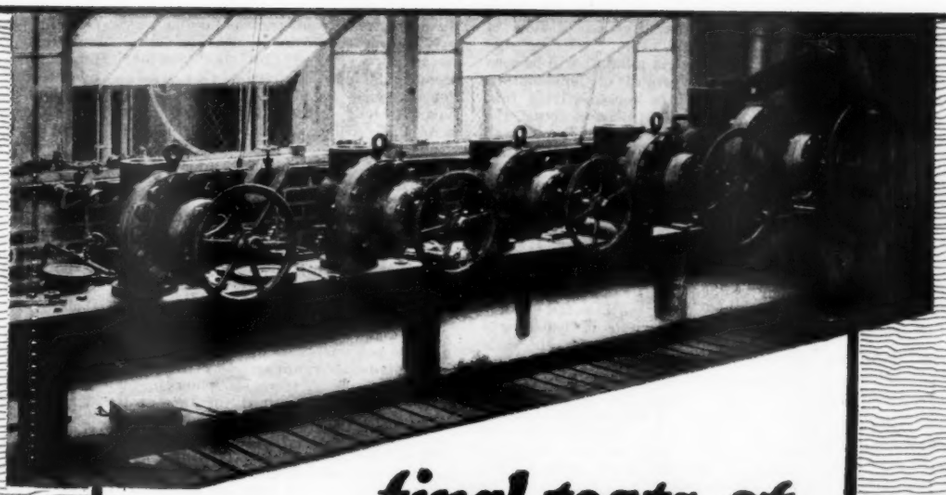
E. T. Koch, formerly head of the natural gasoline department of the Natural Gas & Fuel Corporation, at El Dorado, Ark., has been transferred to the same position with the Arkansas Natural Gas-Arkansas Fuel Oil Company, at Shreveport, La., since the merger of Doherty and Benedum Trees properties in the Shreveport division into Arkansas Natural Gas Company of Delaware.

* * *

Richard A. Wotowitch, of Henry L. Doherty & Company, has been honored by the election to the office of "Seven" of the Seven o'Klockers, an organization consisting of commuters between Philadelphia and New York, who leave Philadelphia on the Reading Railroad at 7 o'clock. There are over 100 members, some of them having commuted for as long as 22 years. Mr. Wotowitch started his back-and-fourth journey about eight years ago.

* * *

Ralph L. Gormley has been appointed district manager of the American Cable Company, Inc., with headquarters at Tulsa. He will have charge of the company's business in the Mid-Continent, Gulf Coast and Rocky Mountain districts. C. R. Worley, formerly of the Dunn Manufacturing Company, is now with the American Cable Company, located at Fort Worth, Tex. R. I. Watkins, formerly with the Hinderliter Tool Company, is handling the Texas Panhandle for the company, with headquarters at Amarillo.



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HUGHES DRILLING VALVES
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When completed, every Hughes valve is tested with kerosene at double the rated working pressure. Shock tests are also made as well as a final test with air at 100-lb. pressure to make sure the wedge will seat perfectly and insure positive closure under any working condition.

The fact that Hughes Valves successfully pass these tests emphasizes the fact that superior quality of material and careful workmanship have entered into their production.

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Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

PIPE LINE CORROSION FROM ELECTROLYSIS

I see electrolysis mentioned quite frequently as a cause of corrosion of gas lines. I wish you would tell me just what sort of conditions result in this kind of damage. I would like to know, too, how to correct the trouble once it has been determined that it arises from electrolysis. I am making this request because one short stretch of buried gas pipe owned by a group of local men seems peculiarly subject to rapid corrosion and the fact that a trolley line runs nearby has made me suspect that it is the source of the trouble.—R. J. K.

An excerpt from a paper prepared by G. M. Merrill, engineer for the Dominion Natural Gas Co., Ltd., Buffalo, N. Y., and read before the Natural Gas and Petroleum Association of Canada in Windsor, Canada, seems to answer your question so well that it is quoted here for that purpose:

"It has been my experience that at least three-fourths of the damage charged to electrolysis can be traced back to soil conditions. With this in mind, it may be well to state a few fundamentals of electrolytic action.

"First, only direct current will cause electrolytic corrosion of pipes, speaking in a practical sense of the word. Alternating current, such as is carried in all transmission lines, has so little effect that laboratory equipment is required to detect it.

"Second, the direction of flow of current must be in one direction at all times, or the corrosive effect will be very greatly reduced.

"Third, there will usually be very little current flowing in lines which have many rubber coupled joints, as these make a very high resistance joint in most cases. And a large flow of current is necessary to a rapid deterioration of lines due to electrolysis.

"Fourth, the direct current must be flowing from the pipe, as the iron atoms are carried in the direction of flow of current.

"With the above in mind, it will be seen that the places where all of the essentials can be fulfilled are comparatively few. However, when such a place is found, the corrosion of the pipe will be rapid, and steps must be taken to halt the electrolytic action.

"Consequently, after it has been definitely determined that electrolysis is causing the damage, there may be several good ways of minimizing the effect.

"First, an examination of the direct current system, usually a street car or radial system, may show a few poorly bonded joints, the repair of which will allow the current to return on the rails as intended.

"Second, if it is found that current is flowing prom a pipe at a specified point most of the time, it may be profitable to bond the pipe to the rail, so that the current will not have to leave the pipe through the ground at all, and so will not cause corrosion."

CRITICAL FLOW OF GAS

I am not a gas engineer, so the question I am going to ask will probably seem elementary to one who knows much about gas. My work in the past has dealt largely with the production of oil. It is now apparent that a knowledge of gas and gas laws is essential in the production of oil. I am likely to ask you many questions from time to time, but the thing I want to know at this time is what is meant by the critical flow of gas. In what way does it differ from any other type of flow?—J. F. S.

Critical flow refers to a certain type of flow through an orifice. In all probability it applies also to flow nipples or flow beans as well, although it is impossible to say here that any work has been done to establish this definitely.

When the ratio of the absolute pressure on the downstream side of an orifice to the absolute pressure on the upstream of the orifice is 0.56 or less, critical flow exists. There is some slight deviation from 0.56 on account of variations in the constituents of natural gas. However, 0.56 represents an average.

As long as the ratio is 0.56 or less, the flow through the orifice is critical and changes in the downstream pressure; that is, the pressure towards the low-pressure end of the line will not change the volume of gas going through the orifice, and the rate of flow is not changed.

To illustrate, let us assume that the upstream pressure or the pressure on the side of the orifice towards the high-pressure end of the line is 500 pounds. Assume a downstream pressure of 200 pounds. The absolute upstream pressure is 500 pounds plus atmospheric pressure (14.4 pounds), or 514.4 pounds. The absolute downstream pressure is equal to 200 pounds plus 14.4, or 214.4 pounds. Dividing the absolute downstream pressure by the absolute upstream pressure, or 214.4 divided by 514.4, a ratio of 0.42 is obtained. Increase the upstream pressure to 550 pounds, or 564.4 pounds absolute, and the ratio of 214.4 to 564.4 is 0.38, or less than the critical ratio, which is 0.56, and the rate of flow through the orifice is increased. This is explained by the increase in density of the gas.

Assume that the upstream pressure is maintained at 500 pounds and that the downstream pressure is increased to 250 pounds, or 264.4 pounds absolute. The ratio of 264.4 pounds to 514.4 pounds is 0.52, or less than the critical ratio of 0.56. Therefore, the flow is still critical. The rate of flow through the orifice is not changed from what is was when the upstream pressure was 500 pounds and the downstream pressure was 200 pounds.

Whenever the ratio of absolute downstream pressure to absolute upstream pressure is more than 0.56, flow conditions are change and we have non-critical flow. As long as the ratio remains more than 0.56, changing either the downstream pressure or the upstream pressure results in a different rate of flow through the orifice.

ARE THEY REAL DIAMONDS?

In the diamond drilling that is done in connection with oil field prospecting are the diamonds that are used genuine diamonds?—O. B. D.

The diamonds used in diamond drilling are genuine, but they are not the white diamonds familiar as settings for rings. They usually are black diamonds, or "carbonados," obtained for the most part from Brazil, but found also in some localities in the United States.

These diamonds have just the same chemical composition as the white stones and are just as hard, with the additional advantages that they are not so likely to break. They will not take a fine polish like their white fellows. They look much like cinders or bits of coke. As found in their native state in gravel or conglomerate beds or the beds of streams, they range from microscopic minuteness to the size of a baseball. They ordinarily run from 5 to 10 karats. They rarely are found in sizes and shape suitable for drill work and must be broken before they can be marketed.

Black diamonds of good quality, broken in readiness for prospecting work, are sold at retail, according to the latest quotations found, at $100 to $125 a karat. Imperfect white gem stones, called borts, have been used as substitutes for black diamonds in oil prospecting where the formations were relatively soft and thus unlikely to break the stones, but in coal prospecting the black diamonds have shown themselves to be the more economical.

Carborundum has also been used to some extent in core drilling.

WELL PERSISTS IN SANDING UP

Would like to have your kind assistance in helping us to solve a difficult problem which we have encountered in one of our oil wells in the Kevin Field of Montana. This well is only a small pumper, but seems to sand up after being pumped for about 30 days. It appears that we are in some sort of quicksand, and although we have cleaned out the well three or four times it continues to fill up with sand, which cuts the leathers and necessitates the expense of cleaning out each time. This well is not paying for itself, but before abandoning it we would like to know if there may be some way of keeping out this sand which is causing our trouble.

The sand is 12 feet thick. The pump barrel is 10 feet deep in the well and it runs just to the top of the sand. The half-inch perforated pipe is 4 feet long.

The daily production immediately after the well has been cleaned out is 20 bbls., and this decreases until the well is sanded up in about 30 days. There is a small quantity of water, probably about 1 per cent. The well is pumped four hours on and two off, with very little gas coming in with the oil.

When the well was drilled in there was approximately 900 feet of fluid in the hole, but it would be hard to say if there is any level in there at all when the well is being pumped.—J. O. G.

There are two methods by which your problem may be handled:

1. Remove daily the sand coming into the hole with the oil. This would necessitate the installation of a pump called a fluid pack pump. This pump is so constructed that the sand does not interfere with its operation. When pumping pump off the bottom in order to remove the sand as it enters the well and thus prevent sanding up. Maintain the pump barrel at the top of the sand and use an anchor with the bottom 5 or 6 feet perforated.

2. Insert a screen pipe of a mesh that will permit the finest particles of sand to pass through but at the same time hold back the coarsest. The coarse sand in time will build up sufficiently to hold back the finer sand. Apparently either the button type of screen pipe or the wire-wound will answer your purpose. Makers of both types advertise in The Oil and Gas Journal. A sample of the sand sent to one of the screen pipe manufacturers should enable him to select for you the mesh of screen best adapted for the purpose. Judging from your letter there is no pipe in the well below the top of the sand other than the 4-foot anchor.

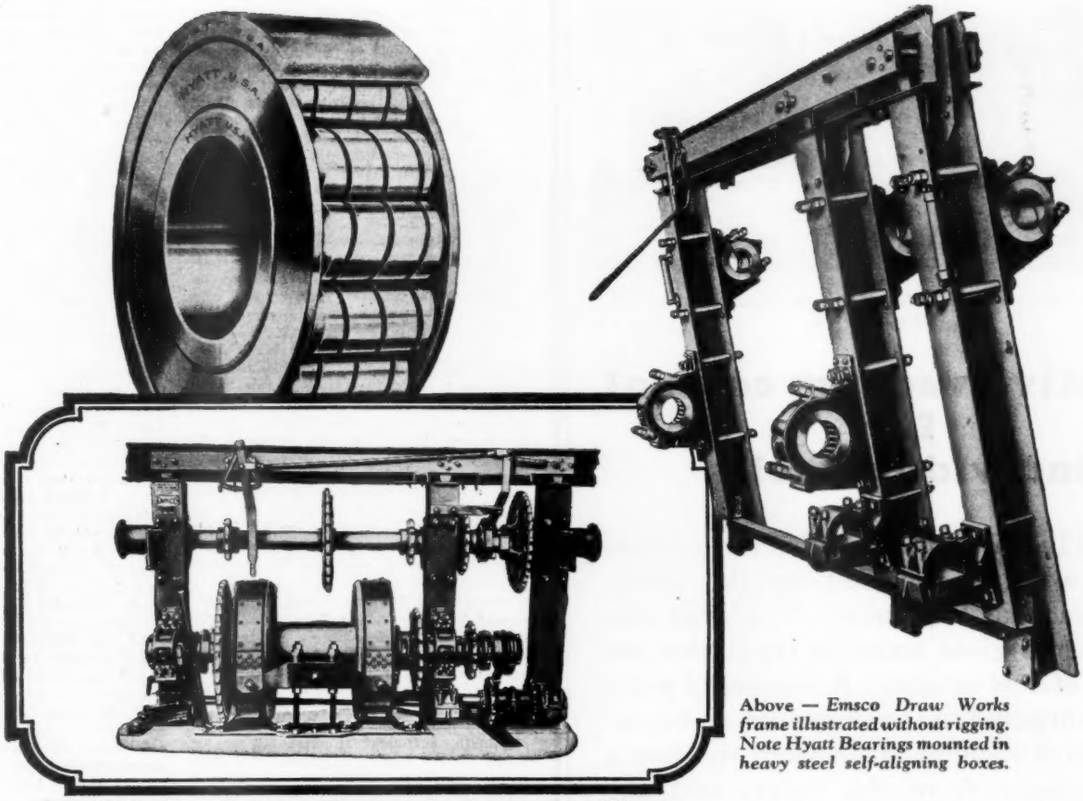
It would be well to try one or both of these methods before abandoning the well. If in the end you should decide upon abandonment, it is suggested that you leave the well in a condition that will permit you to use it in repressuring at a later date if there should seem to be any possibility of utilizing such a method of increasing production. This suggestion assumes, of course, that there are other wells on the lease.

REMOVING WATER WITH SIPHON

I have a number of gas wells that are making water. I have tried blowing the water from the wells by opening the gate valve but it doesn't seem to help much. In fact one of the wells went dead when I tried this. I have heard that pinching a number of small holes at different places in small tubing and then flowing the water through the tubing will remove the water. What I would like to know is, have you any information on this? I have used small tubing for a siphon line but I never put any holes in it.—G. N. T.

Water has been removed from wells with a siphon such as you describe when the pressure has dropped to as low as 30 pounds in wells approximately 1,800 feet in depth. A number of one-sixteenth-inch holes were drilled in the siphon and these were located at different depths in the well. Assuming that the well pressure was 40 pounds, this would be equivalent to an 85-foot head of the average salt water found in gas sands. The water would be raised about 550 feet at this pressure. Thus by spacing the gas jets every 550 feet, the water could be removed. As the fluid level is lowered another jet would be uncovered and additional gas would enter the line and assist in lifting the water.

One objection to this method is that the pressure required to operate the siphon after the water starts flowing from the well is less than that required to start the siphon. Also the gas requirements are less. In addition, the well pressure increases as the fluid level is lowered. The result is that only a part of the gas entering the siphon is necessary to remove the water. When the gas produced from the siphon is utilized and not blown to the air, this objection does not enter. However, if the siphon gas is blown to the air and only that produced from between the siphon and casing is utilized, an appreciable volume of gas may be wasted. Under those conditions it may be better policy to place only a sufficient number of jets just above the water level to operate the siphon and to use some outside source of pressure to start the siphon operating.



Above — Emsco Draw Works frame illustrated without rigging. Note Hyatt Bearings mounted in heavy steel self-aligning boxes.

Draw Works—Emsco Derrick and Equipment Co.—Los Angeles and Houston

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Small wonder, then, that Hyatt Roller Bearings are found in leading oil field equipment and wherever better bearings are used.

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LANDING AND CEMENTING LONG WATER STRINGS IN CALIFORNIA

By J. B. Case
Chief Deputy Supervisor, California Department of Petroleum and Gas

Drilling to deep-lying oil sands, discovered in some of the southern California fields, has been the cause of the highly developed efficiency in handling long, heavy strings of casing in the hole and the placing, within a limited time, of large quantities of cement behind them. The job of lowering a long string of casing into position, to be cemented in a well, demands that careful attention be given to many details prior to and during the operation. The condition of the hole has much to do with placing the casing in position in the well.

There are several very important features in connection with the landing and cementing of any water string, shallow or deep. These features might be termed "fundamental principles" and they are salient factors in securing satisfactory results.

First, the shoe of the casing should be set in a suitable formation for impervious bonding, preferably shale. This necessitates accuracy in measurements of depth of hole where the important formations in a well are encountered, such as marker beds for correlation purposes, top of oil-producing formations, and top and thickness of the shale stratum immediately overlying the oil sands. The necessity of accuracy in all measurements, both in depth of hole and length of casing, can not be overemphasized.

Second, the bonding material, cement, should be in place behind and completely surrounding the casing.

Third, equilibrium of pressure should be established in the hole so that the cement will not be disturbed by any fluid action in the hole or by movement of itself during the period of setting.

Fourth, sufficient time should be allowed for the cement to harden and cure before subjecting it to tests and stresses which might impair what would otherwise be a perfect water shut-off.

Best Operating Practice

It is best operating practice to land as large casing as can reasonably be used above the top of the oil sand or oil zone. The depth to the oil sand and the collapsing strength of the casing determine the maximum size which should be used. The diameter of the hole should be enough larger than that of the casing as is necessary to give the best conditions for the cementing operation. Two requirements for the most favorable conditions are: First, there must be enough space between the formation walls and the casing to insure forming a continuous wall of cement around the casing; second, when circulating mud fluid through the casing and when cementing, the velocity of the ascending column of mud fluid or cement outside the casing should be greater than the velocity of the descending column in the casing.

The second requirement is very desirable when 8¼-inch and larger casings are to be cemented.

The maximum size a hole should be drilled, for a given size of casing, to insure a greater upward velocity of the fluid column outside the casing is determined by the formula $D^2=2d^2$ where D is the diameter of the hole and d the inside diameter of the casing. This formula gives for D when using

- 12½-inch casing—17.66 inches maximum diameter of hole.
- 11 -inch casing—15.55 inches maximum diameter of hole.
- 10 -inch casing—14.00 inches maximum diameter of hole.
- 8¼-inch casing—11.66 inches maximum diameter of hole.
- 6¼-inch casing— 8.85 inches maximum diameter of hole.

By using the inside diameter of the casing in the above formula a safety factor is provided, since the casing itself occupies part of the space through which the outside column of fluid moves.

If the diameter of the hole is too much greater than that of the casing, portions of the cement column may become sluggish and begin setting before all the cement is displaced from the casing. When sufficient velocity is maintained, the initial set of the cement is delayed until it is all displaced, and without seriously affecting its strength.

When 6¼-inch and smaller sizes of casings are cemented, the velocity of the outside column of cement is probably great enough to prevent sluggishness and premature setting, even with the diameter of the hole a little more than 8.85 inches.

Where the landing and cementing of a long string of casing is contemplated every part of the work connected with the drilling of the hole should be done in a manner to obtain the best conditions for the cementing job. Cementing operations are performed under so many conditions, varying from ideal to most unfavorable, that in writing on the subject it seems advisable to outline the technique of good drilling practice which results in ideal conditions. Unfavorable conditions are usually the result of mishaps, more or less avoidable, and easier to prevent than to remedy.

Uniform Diameter of Hole

While drilling is progressing, the bore hole should be kept as straight as possible and full size at all points, so that when the desired size casing is put in it will be free from binding and leave ample space between it and the wall of the hole for the circulation of drilling fluid. The diameter of the hole is sometimes affected by the formations penetrated. Gravel is apt to cave or run into the hole and bridge. Hard shells and some shales swell, due to the contact with moisture in the circulating mud fluid, and cause the diameter of the hole to repeatedly diminish at those points. It is always best to keep the hole well reamed by using four-way bits or other suitable tools. A short bit should not be used at any time, as an out-of-round hole is too apt to be made and cause an undue number of fishing jobs. The necessity of running "feelers" into a hole such as "overshots" can be almost entirely eliminated by keeping the hole well reamed to full size. Running "feelers" is hazardous and is a costly waste of time, if unnecessary.

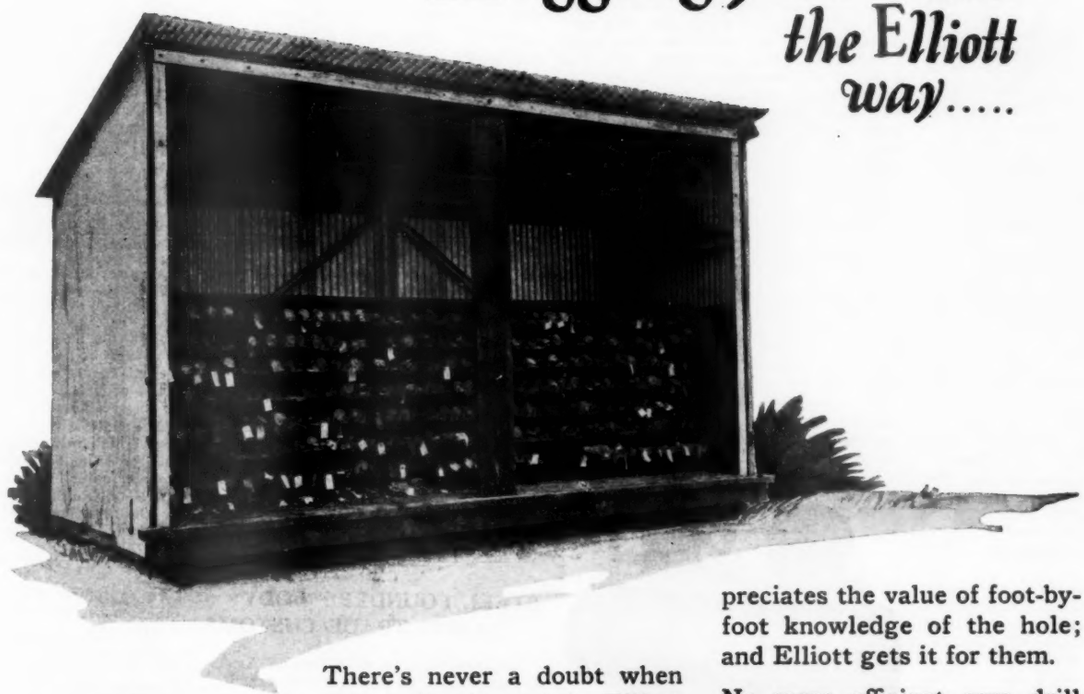
Good Condition of Hole

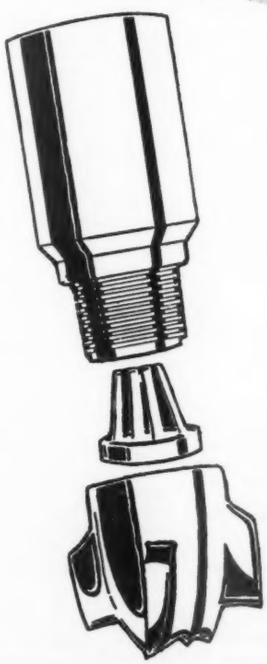
Good quality mud fluid must be used to keep the hole in good condition, and if the formations do not furnish an adequate supply, additional mud-making material should be hauled to the well. A retarded drilling rate through gravels and coarse porous formations gives better opportunity for them to become mudded and plastered and held in place than if drilling through too rapidly. These porous formations must be sealed to the extent that there will be no movement of fluid into the hole from them and only a minimum movement of fluid into them from the hole.

Where the exact cementing point is to be determined by coring, as is the usual present practice, a small hole, termed a pilot hole, is drilled ahead of the full size hole with a core barrel. The pilot hole should be centered by using a diamond point or other suitable tool. Unless it is centered it may be very close to one wall and tend to cause a deflection of the hole at that point, when drilling is continued. The top of the oil sand is accurately located, and the larger hole made to the point at which the water string is to be set and cemented. If a considerable footage of pilot hole is drilled after the top of the oil sand is located, it necessitates plugging the hole prior to cementing the water string or cementing the casing on a formation shoulder instead of on bottom. The best practice is to plug the hole. If this is not done, the shoulder, on which the casing is to be cemented, should have been left far enough above the top of the oil and gas measures to prevent any inter-

(Continued on Page 96)

Logging your Well the Elliott way.....





There's never a doubt when your well is logged the Elliott Way. Coring is the modern way to log—and Elliott's the modern way to core! The core rack shown in the illustrations furnishes the log of a well-known international producer —unquestioned evidence of every formation drilled through.

Like many other up-to-date producers, this company appreciates the value of foot-by-foot knowledge of the hole; and Elliott gets it for them.

No more efficient core drill than the Elliott is made. It produces an indisputable log at the lowest cost per foot. It requires no special knowledge to use—any proficient driller can produce perfect cores with the Elliott core drill.

Are you logging *your* well the modern way? Let Elliott help you: write for the latest bulletin.

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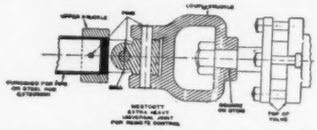
Export Office:
150 Broadway, New York

ELLIOTT CORE DRILL

EQUIPMENT AND SUPPLIES

NEW UNIVERSAL JOINT FOR REMOTE CONTROL

The Westcott extra heavy universal joint for remote control of drilling gate valves is an adjunct in the drilling of gas and oil wells. It consists of a solid steel yoke which fits over the square of the valve stem and is fastened rigidly to the stem by means of the nut. It is



provided with a universal joint and yoke, or sleeve, into which may be screwed a joint of pipe and by continuing the pipe the gate may be opened or closed at any distance from the well desired.

The universal joint feature provides for taking care of any fit alignment through the knuckle joint and as a consequence no undue stress is placed upon the stem, regardless of the position of the pipe at the other end. These joints are manufactured in the plant of the Westcott Valve Co., East St. Louis, Ill., and distributed through Continental Supply Co. stores.

RUSSIAN EQUIPMENT

With a view to examining the orders placed by the Asneft (Baku oil authority) for equipment to be imported from abroad, and also the stocks of equipment in the warehouses of the Asneft, as well as with a view to finding out to what extent the equipment received from abroad is being utilized, a commission has arrived in Baku consisting of representatives of the Supreme Economic Council and the Commissariat of Trade. The arrival of the commission is connected with the application by the Asneft, in accordance with the estimates passed, for permission to place orders abroad for equipment in the course of the financial year 1927-28.

Up to the present time all drilling outfits and material required for the Russian oil fields have been imported. On the initiative of the Russian Geological Committee, the London Oil News says the manufacture of equipment in the workshops of the Soviet Union has been undertaken. The first order has now been given for Russian equipment, and the Isorsk works are manufacturing 20 outfits according to the specifications of the Geological Committee. These are complete outfits—derricks, engines, pumps, pipe and accessories. These 20 outfits will be delivered in the next five months, and will give a reply to the question whether Russian-made equipment can be relied upon for serious work in the fields.

LEADER ANNOUNCES NEW UNITS

The Leader Iron Works of Decatur, Ill., has added to its air compressor line a complete new group of Leader units equipped with Worthington compressors. These units range in capacity from 2.5 cubic feet per minute to 12 cubic feet.

The compressors are equipped with Laidlaw feather valves which seat by contact, not by impact. The pressure lu-

bricating system is the same as that used in higher grade automobile construction.

The motor is mounted on an automatic sliding base which maintains proper belt tension. Automatic controller and unloading valve are also included. The tanks are of rivet-weld construction, with hot-driven rivets, and seams electrically arc-welded.

OIL LINES SUFFER IN ST. FRANCIS DAM DISASTER

"Caterpillar" tractor pulling trees, hooking wreckage and clearing up tangled material in the Santa Clara River bottoms, where the St. Francis Dam break deposited debris and silt. More than 200 "Caterpillars" were mobilized from farm, ranch, city, counties and state to aid in reconstruction work. The disaster, which is estimated to have cost 400 lives and upwards of $30,000,000 property damage, hit the oil pipe lines hard. Much of the wreckage was oil-soaked as the result of broken lines.

EXCHANGER FOR HANDLING DIRTY LIQUIDS

A type of heat exchanger and cooler has recently been developed for handling dirty or corrosive liquids and gases. This apparatus, called the G-R Tubeflo Section, is said to have several features which enable it to be successfully used for severe conditions. The G-R Tubeflo Section is made entirely of semisteel in order to withstand corrosion, and the fluid passages are straight, smooth, cored holes which are readily cleaned. The main portion consists of a number of body pieces bolted together to make up the required length for a desired cooling effect. At one end is bolted a stationary head which contains the inlet and outlet connections, together with the necessary partitions for directing the flow of the mediums through the four chambers of the body pieces. At the opposite end, a floating bonnet forms a crossover connection between the passages. The stationary head is also provided with a removable cover which permits easy inspection and accessibility for cleaning.

The various parts of which the G-R Tubeflo Section is built up are all standard and interchangeable, reducing the cost and making them exceedingly flexible in capacity and cooling effect. Sections are readily made longer or shorter by changing the number of body pieces; they can be installed in stacks one over another; and any number of stacks can be used in parallel, depending upon the duty they handle. When arranged in stacks, the stationary heads of the sections are bolted together, and the body pieces of each section are held in proper position by lugs which permit free movement for expansion and contraction.

The smooth cored passages permit the use of high velocities of the hot and cold fluids, with correspondingly high heat transfer rates but low resistance to flow. G-R Tubeflo Sections are manufactured by the Griscom-Russell Co., New York. A descriptive bulletin is available.

Illustration of G-R Tubeflo section, showing parts.

STEEL FOUNDERS' BODY LISTS TRADE CUSTOMS

The Steel Founders' Society of America, with headquarters in Pittsburgh, Pa., has issued the following list of standard trade customs in the steel foundry industry:

"1. When purchasers ask for quotations they should give the actual or estimated rough weights of the castings upon which quotations are to be based.

"2. Unless otherwise arranged, quotations should be accepted and pattern equipment furnished to the foundry by the purchaser within 30 days from the date of such quotations.

"3. Unless otherwise specified, castings are sold as unmachined castings, f. o.b. the foundry. Terms of sale are net cash 30 days from date of invoice. No cash discounts are allowed.

"4. Pattern equipment should be in proper condition and of a type suitable for the economical production of castings of the quality, quantity, and delivery required.

"5. Before patterns are made, the purchaser should submit blue prints to the foundry that is to make the castings, to obtain suggestions concerning the best method for constructing the pattern equipment.

"6. When the purchaser furnishes skeleton patterns, coreboxes, sweeps, or conjunction patterns which increase the cost of production of castings, an extra charge will be made.

"7. Patterns should be painted in accordance with the following standard practice: Surfaces to be left unfinished are to be painted black. Surfaces to be machined are to be painted red. Seats of and for loose pieces are to be red stripes on a yellow background. Core prints and seats for loose core prints are to be painted yellow. Stop-offs are to be indicated by diagonal black stripes on a yellow base.

"8. Patterns, coreboxes, and loose pieces thereof shall be properly marked for identification.

"9. Alterations and repairs on pattern equipment shall be paid for by the customer.

"10. The foundry shall not be responsible for loss of, or damage to pattern equipment when caused by fire or other causes beyond its control.

"11. The foundry shall not be expected to provide storage for patterns for which no orders have been received during a period of two years.

"12. All transportation charges on pattern equipment to and from the foundry shall be paid by the customer.

"13. Unless requested in writing, changes in orders will not be acepted by the foundry.

"14. To be effective, cancellation of orders must be mutually agreed to by the foundry and the customer.

"15. After the original order is in production the customer shall reimburse the foundry for castings made or for molds or cores discarded by the foundry due to cancellation, changes in orders or alterations in pattern equipment.

"16. The foundry shall not be liable for damages due to failure to make delivery of castings when such delay is caused by fires, strikes, accidents, or other and additional causes beyond the foundry's control.

"17. Claims for errors in weight or in number of castings received shall be made by the customer within 10 days after the receipt of the castings.

"18. The foundry shall not be responsible for machine work or other expense incurred on castings which are later rejected as defective.

"19. The foundry has the right to replace castings rejected by the customer as defective.

"20. The foundry shall not be liable for any special, indirect, or consequential damages whatsoever, in connection with any castings it furnishes."

WRIGHT BUSINESS SOLD

The Wright Manufacturing Co., Lisbon, Ohio, manufacturer of chain hoists, trolleys and cranes, announced the sale of its business and trade name to the American Chain Co., Inc., with executive offices in Bridgeport, Conn. No change is expected in policies or sales organization of the Wright Manufacturing Co. H. F. Wright and W. F. Wright will continue in their respective divisions of sales and production of Wright products.

THE
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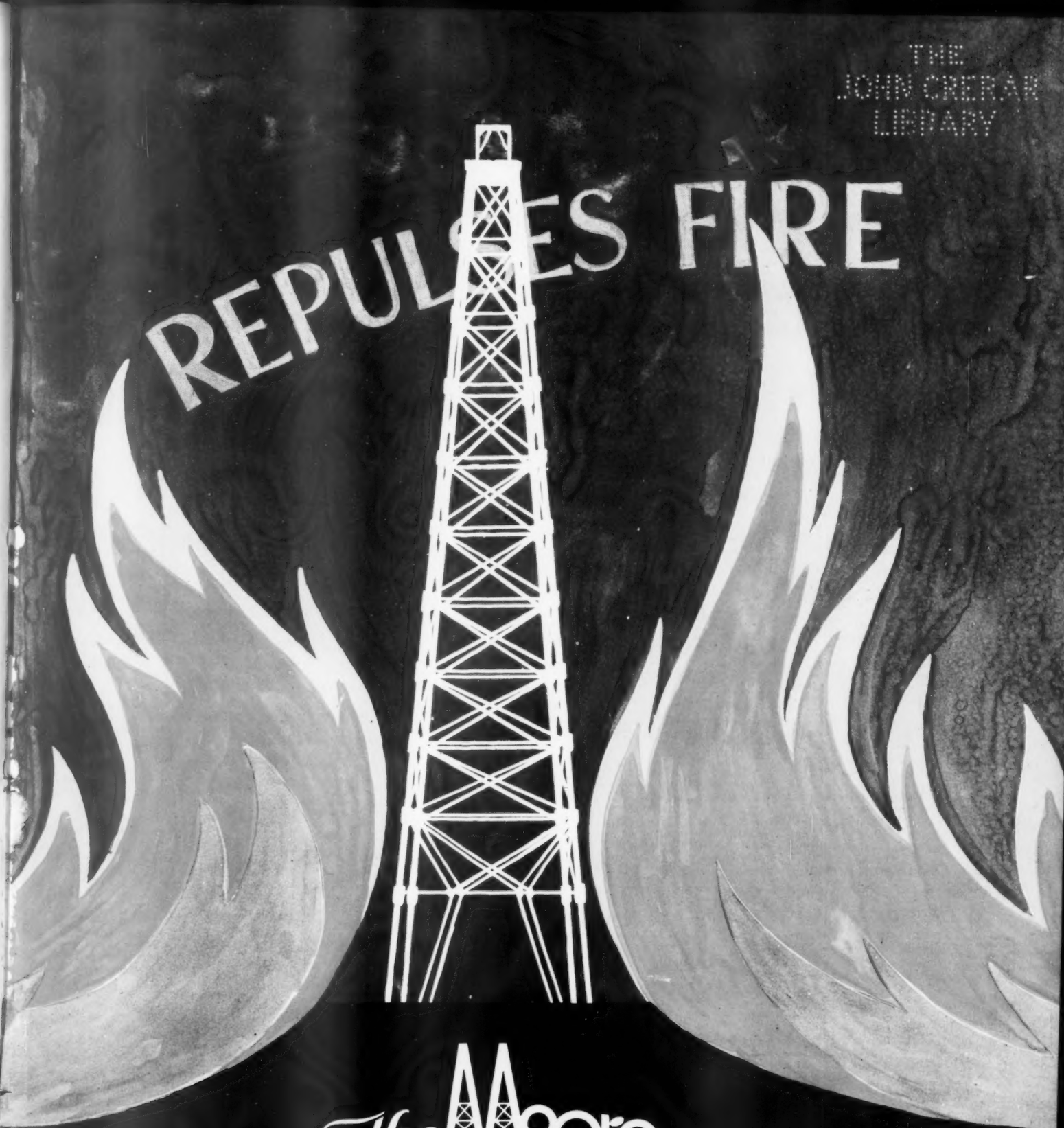
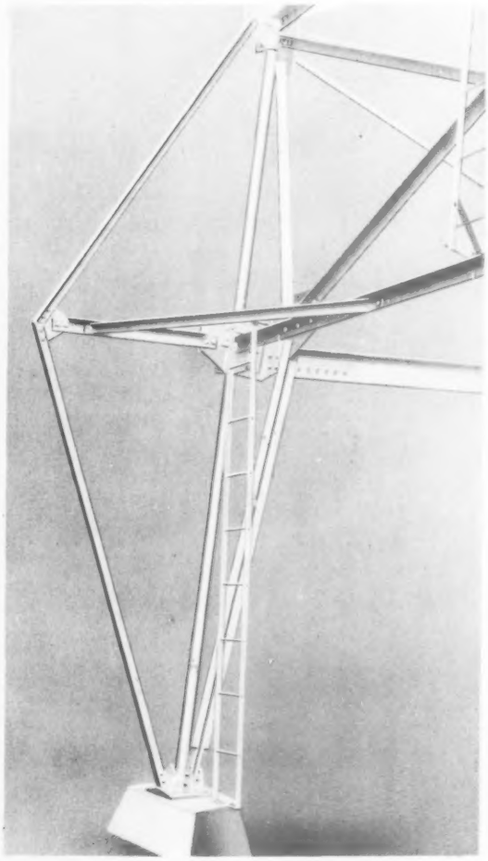


The Moore
CHAMPION
a super derrick

The Moore CHAMPION
a super derrick

Conquers the Giants in the Oil Country

THE Moore Champion Derrick offers no kindling wood to appease the appetite of the Fire Giant. Its all-steel construction affords the greatest protection to both life and property. Many wise operators have written this "fire ordinance" in their books—ALL STEEL.



Perhaps no feature is receiving greater acclaim than the wing bracing in the first panel. The rigidity which this adds is truly surprising. It gives added strength to withstand the heavy overloads which winds and unusual drilling conditions create.

A diagonal cross brace runs from the wing to the first girt. This keeps the wing in position and assures its carrying its proper load. The construction of this wing bracing is simple and its erection is easy. It has been standardized so that it is interchangeable on all Moore Champion Derricks.

Every part of the derrick is designed to contribute to rapid and easy erection. Track bolts are used through the legs and for the clamping flanges. Girts and braces are punched to a close gage so that the head of a standard machine bolt cannot turn while tightening. These features allow bolts to be tightened with one wrench.

Lee C. Moore and Company, Inc., Pittsburgh · · Tulsa

ESTABLISHED 1907

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30 Church St., New York, N.Y.

DALLAS, TEXAS · HOUSTON, TEXAS · WICHITA, KANSAS
PARKERSBURG, W. Va. · CASPER, WYO. · SHREVEPORT, LA.

Stocks in All Principal Fields

OKLAHOMA FIELDS

(Continued from Page 48)

cor. SW, Section 20-7-4, is flowing 100 bbls. from Hunton lime at 3,740-4,068 feet.

Seminole County

Sinclair Oil & Gas Co.'s No. 6 Yarbrough, NE cor. NW NE, Section 4-10-8, is rigging up to deepen from 3,412 feet. Twin State Oil Co. is building the rig for No. 1 Lowe, SW cor. SE, Section 25-8-6, Little River area. W. R. Ramsey has the rig on the ground for No. 5 Culley, NW cor. SW SW NE, Section 18-5-8, Allen Pool. Sinclair Oil & Gas Co. moved the rig out for No. 1 Nakoche, NE cor. SW, Section 18-5-8.

Shaffer Oil & Refining Co.'s No. 7 Clark, NW cor. SW SE, Section 1-9-5, Earlsboro Pool, has been completed for 197 bbls. in Wilcox sand at 4,373-98 feet. The Texas Company's No. 8 Anderson, NE cor. NW SE, Section 2-9-5, swabbed 495 bbls. from Wilcox sand at 4,374-86 feet. Twin State Oil Co.'s No. 6 Barker, SW cor. NE NE, Section 12-9-5, topped Wilcox sand at 4,383 feet, drilled to 4,393 feet and was abandoned after pluggig back to 4,375 feet and ripping casing. Magnolia Petroleum Co.'s No. 1 Hyde, NW cor. SE NW, Section 13-9-5, made 2,085 bbls. from Wilcox sand at 4,414-20 feet.

The Prairie Oil & Gas Co.'s No. 3 Aldridge "A," SW cor. SE, Section 34-8-6, is dry at 4,890 feet. Carter Oil Co.'s No. 1 Mecco, SE cor. NE, Section 9-8-6, made 145 bbls. from Wilcox sand at 4,154-79 feet. Sinclair Oil & Gas Co.'s No. 5 Jones, NW cor. SE SE, Section 9-8-6, Bowlegs Pool, was completed for 75 bbls. in sand at 4,532-34 feet. Tidal Oil Co.'s No. 3 Harjoche, SW cor. NE SW, Section 10-8-6, has been abandoned at 4,730 feet in Viola lime. J. E Crosbie's No. 2 Sewell, SW cor. NE SW, Section 15-8-8, is dry and abandoned at 3,297 feet. Carter Oil Co.'s No. 1 Phillips, NW cor. NE NW, Section 18-6-8, is pumping 85 bbls. from Woodford sand after drilling to 4,178 feet in Wilcox and plugging back to 3,962 feet. Mid Continent Petroleum Corp.'s No. 3 Fleet, NE cor. NW SE, Section 7-5-8, Allen Pool, is pumping 78 bbls. from sand at 2,468 feet. No. 9 Fleet, SE cor. NW SE, Section 7-5-8, made 750 bbls. from sand at 2,460-75 feet. The Texas Company's No. 1 Hyde, SE cor. NW SW, Section 8-5-8, was completed for 519 bbls. in sand at 2,347-91 feet. No. 2 Hyde, SW cor. NW SW, Section 8-5-8, made 369 bbls. from sand at 2,396-2,408 feet. The Prairie Oil & Gas Co.'s No. 1 Varnum, NW cor. SW SW, Section 5-9-6, made 30 bbls. from Hunton lime at 4,220-35 feet.

Stephens County

Brannon and others built the rig for No. 2 Funk, SE cor. SW SE, Section 19-1-8w. Clark & Cowden's rig is up for No. 1 Williams, NE cor. NW SE, Section 31-1-8w. Fisher and others' No. 1-A Nelson, NW cor. SE NE, Section 28-1s-8w, is a rig under construction. Roy Carter's No 1 Burke, NW cor. SE SE, Section 34-1s-8w, is rigging up rotary tools. Magnolia Petroleum Co.'s No. 5 Burke, NW cor. NE NW NE, Section 34-1s-8w, is a location. Winkler & McQueen's rig is up for No. 1 Hite, SW cor. NE, Section 35-1s-8w. Wirt Franklin Oil Corp. has the rig up for No. 4 Fobb, SE cor. NE SE, Section 12-2s-8w. No. 1 McMasters, NW cor. NE NE, Section 13-2s-8w, is a rig under construction.

American Pipe Line Co.'s No. 2 Bond, SW cor. NW SW, Section 7-2s-7w, is drilling at 100 feet. Maer & Stanforth's No. 1 Bond, SW cor SE, Section 7-2s-7w, is drilling at 100 feet. George Pace and others' rig is up for No. 1 Pennington, NW cor. SW NE, Section 18-2s-7w. Humble Oil & Refining Co. has built the rig for No. 4 Peddycoart, SW cor. NE NE, Section 25-1s-4w. Magnolia Petroleum Co. has the rig up for No. 1 Helvy, NE cor. NW NW, Section 24-1s-4w. The rig is also up for No. 1 Wright, SE cor. NE SE, Section 36-1-4w.

Mudge Oil Co.'s No. 7 Spears, NE cor. SE SE NW, Section 23-1s-5w, made 4 bbls. from sand at 640-66 feet. Scott & Arington's No. 1 Brown, NE cor. SW NW, Section 19-2s-7w, was completed for 5,000,000 feet of gas in sand at 1,471-76 feet. Skelly Oil Co.'s No. 6 Krebbs, SW cor. SE, Section 13-1s-4w, made 686 bbls. from sands at 2,596-2,772 feet. Schermerhorn Oil Co. and others' No. 3 Shields, NW cor. NE SW, Section 13-1s-4w, made 390 bbls. from sands at 2,754-3,761 feet. No. 1 Russell, NE cor. NW SE, Section 11-1s-4w, was completed as a dry hole at 3,506 feet.

Tillman County

Everts and others moved rig timbers out for No. 1 Indian, SW cor. NW NE, Section 11-5s13w.

Tulsa County

Glidden Oil Corp. has a machine on the ground for No. 4 Johnson, CNL SW NE, Section 15-19-11. Nowata Oil & Refining Co.'s No. 4 Bedrey, SW cor. NE SE, Section 30-19-12, is spudding.

Holmes and others' No. 1 Cooke, NW cor. SW, Section 20-19-10, is dry and abandoned at 3,202 feet. Glidden Oil Corp.'s No. 2 Jones, SW cor. NE NE, Section 15-19-11, has been completed for 30 bbls. in Dutcher sand 1,675-1,703 feet. Short & Maness' No. 1-A Stanwaite, NE cor. SE NW, Section 15-18-12, is dry and abandoned at 2,225 feet.

Wagoner County

Crosbie and others' No. 4 Grayson, NE cor. SE, Section 15-16-14, is spudding. Brophy & Lumel built the rig for No 1-A Gibson, NE cor. NW NW, Section 17-16-15.

Robinson and others' No. 1 Island, NW cor. SW, Section 21-19-16, is dry and abandoned at 565 feet. Boyd & Hanks' No. 3 Pressley, CNL SW NW, Section 7-18-15, is dry and abandoned at 1,323 feet. Boyd & Hanks' No. 4 Pressley, CEL SW NW, Section 7-18-15, is a 5-bbl. well in sand at 1,287-94 feet. J. H. Scriba's No. 4 Cane, SE cor. NW NW SW, Section 30-17-18, is a dry hole at 620 feet.

Greater Seminole Production

Production of the Greater Seminole region by companies and leases for Friday, April 20, is given below:

Little River Pool

Company, Farm, Location—	Wells	Prod.
Amerada:		
Nitey ... 2- 7-6	3	2,740
Amerada-Wilcox:		
Pore ... 35- 8-6	2	730
Barnsdall:		
Hotulke ... 22- 7-6	1	35
Blackwell:		
Nitey ... 35- 8-6	6	1,728
Carter:		
Fish ... 36- 8-6	6	1,530
Jackson ... 11- 7-6	1	725
Continental:		
Cosar ... 36- 8-6	4	2,005
Gypsy:		
Brown ... 33- 8-6	1	50
Conard ... 22- 7-6	1	2,100
Campbell ... 36- 8-6	2	222
Mungee ... 1- 7-6	1	25
Pottle ... 35- 8-6	3	340
Renton ... 11- 7-6	1	277
Independent:		
Harris ... 23- 7-6	1	1,921
Davis ... 2- 7-6	3	3,030
I. T. I. Oil Co.:		
Campbell ... 1- 7-6	1	88
Dungan ... 35- 8-6	3	2,373
M. A. House ... 1- 7-6	2	232
W. E. House ... 1- 7-6	1	43
W. E. House "B" 2- 7-6	4	2,549
Hull ... 26- 8-6	1	76
Jackson ... 1- 7-6	3	1,947
McCulla ... 1- 7-6	3	740
Nitey ... 2- 7-6	7	1,267
Phoebe "A" ... 36- 8-6	3	684
Phoebe "B" ... 36- 8-6	4	377
Reed ... 1- 7-6	1	67
Soketheche ... 1- 7-6	4	985
Magnolia:		
Cruse ... 2- 7-6	3	1,620
Dixon ... 31- 8-7	1	0
Pottle ... 35- 8-6	4	803
Mid-Continent:		
Smith ... 5- 7-7	1	25
Wadsworth ... 36- 8-6	7	925
W. B. Pine:		
Hoyecha ... 26- 8-6	1	1,000
Pine-Phillips:		
Pottle ... 35- 8-6	2	813
Prairie:		
Chilcoat ... 25- 8-6	1	345
Dungan ... 35- 8-6	1	110
House ... 2- 7-6	4	1,615
Shaffer:		
Narcome ... 36- 8-6	1	90
Sinclair:		
Cosar ... 36- 8-6	2	1,350
Snowden-McSweeney:		
Tiger ... 13- 7-6	1	2,372
Superior:		
Soketheche ... 1- 7-6	1	13
Texas:		
Coker ... 1- 7-6	3	585
Tidal:		
House ... 1- 7-6	3	880
Johnson ... 1- 7-6	1	75
Total ...	109	41,507

Maud Pool

Barnsdall:		
Fife ... 14- 8-5	1	350
I. T. I. Oil Co.:		
State ... 16- 8-5	1	0
Total ...	2	350

Bowlegs Pool

Amerada:		
Roscoe ... 15- 8-6	8	1,805
Atlantic:		
Baker ... 10- 8-6	4	225
Fleet ... 23- 8-6	3	475
Grayson ... 12- 8-6	4	590
A. Jones ... 16- 8-6	3	90
C. Jones ... 9- 8-6	2	173
Barnsdall:		
McNac ... 28- 8-6	1	26
Murrow ... 11- 8-6	4	720
Carter Oil:		
Bowlegs ... 15- 8-6	4	1,305
Burden ... 23- 8-6	3	260
Harjoche ... 14- 8-6	6	540
Hilly ... 23- 8-6	3	800
Jones ... 11- 8-6	4	1,345
McGeisey ... 21- 8-6	1	30
S. Mecco ... 9- 8-6	1	135
Melissa ... 9- 8-6	1	120
Walker ... 15- 8-6	4	635
Wise ... 23- 8-6	12	1,895
Empire:		
Lacy ... 14- 8-6	6	461
Wise ... 23- 8-6	2	357
Gypsy:		
Bowlegs ... 22- 8-6	1	85
Bradley ... 9- 8-6	1	2
Cumsey ... 10- 8-6	4	1,167
Doser ... 7- 8-6	1	100
Grayson ... 13- 8-6	4	762
Harjoche ... 10- 8-6	2	2,730
Jones ... 11- 8-6	1	237
Walker ... 15- 8-6	8	1,792
Wise ... 23- 8-6	3	237
I. T. I. O.:		
Barnett ... 24- 8-6	2	145
Barnett "B" ... 23- 8-6	1	177
Billington ... 22- 8-6	5	807
Bowlegs ... 22- 8-6	10	1,738
Davis ... 13- 8-6	4	1,291
Fay ... 13- 8-6	9	2,120
Goforth ... 15- 8-6	12	1,722
Livingston ... 15- 8-6	11	3,465
Lizzie ... 13- 8-6	2	409
I. T. I. O.:		
Walker ... 15- 8-6	8	909
Wilmott ... 15- 8-6	4	516
Work ... 24- 8-6	1	119
Youngblood ... 24- 8-6	2	102
Magnolia:		
Davis ... 13- 8-6	3	536
M. Davis ... 13- 8-6	1	260
Hammond ... 10- 8-6	3	426
Rhodes ... 12- 8-6	4	4,384
Van Buskirk ... 9- 8-6	1	320
McCulloch:		
Bowlegs ... 22- 8-6	2	420
Mid-Continent:		
Baker ... 10- 8-6	4	1,385
Bowlegs ... 22- 8-6	1	50
Smith ... 12- 8-6	6	535
Minnehoma:		
Bowlegs ... 15- 8-6	4	325
Prairie:		
Gahagan ... 23- 8-6	4	380
Harber ... 10- 8-6	8	2,870
Jones ... 11- 8-6	4	225
Templeton ... 12- 8-6	6	2,655
Whitney ... 23- 8-6	4	540
Pure Oil:		
Reed ... 14- 8-6	15	2,422
Strother "D" 11 & 14- 8-6	4	499
Strother "F" ... 10- 8-6	4	2,026
Roxana:		
Taylor ... 16- 8-6	5	524
Shaffer:		
Lacy ... 14- 8-6	3	322
Sinclair:		
Bowlegs ... 22- 8-6	1	80
Cumsey ... 10- 8-6	4	3,781
Eilen ... 11- 8-6	7	1,162
Harjo ... 14- 8-6	3	575
Jones ... 9- 8-6	7	3,000
Taylor ... 10- 8-6	4	2,367
W. Taylor ... 10- 8-6	1	913
Walker ... 22- 8-6	4	1,040
The Texas Company:		
Reed ... 14- 8-6	11	2,600
Tidal:		
Grayson ... 13- 8-6	4	710
Harjoche ... 10- 8-6	6	1,570
Twin States:		
Jones ... 11- 8-6	3	84
Total ...	312	71,605

Earlsboro Pool

Amerada:		
Anderson ... 15- 9-5	2	1,120
Cowden ... 4- 9-5	8	1,655
Rogers ... 3- 9-5	2	1,100
Atlantic & Sinclair:		
Foreman ... 18- 9-5	1	179
Barnsdall:		
Brown ... 10- 9-5	4	1,963
F. Bruner ... 2- 9-5	2	835
N. Bruner ... 10- 9-5	4	1,563
Cudjo ... 14- 9-5	1	26
D. Davis ... 11- 9-5	3	387
J. Davis ... 11- 9-5	4	734
M. Davis ... 11- 9-5	3	107
Gibson ... 9- 9-5	8	2,905
Hern ... 15- 9-5	1	4
Ingram ... 1-9- 5	8	2,031
S. Pack ... 10- 9-5	4	282
Peter ... 10- 9-5	4	314
Sango ... 1- 9-5	3	7,517
Sebolka ... 15- 9-5	1	524
H. Sullivan ... 11- 9-5	1	5
Sull-Harjo ... 10- 9-5	2	58
Wasutke ... 12- 9-5	4	1,755
Car er:		
Davis ... 13- 9-5	2	560
Payne ... 12- 9-5	3	20
Sango ... 1- 9-5	4	1,795
Continental:		
Kays ... 2- 9-5	2	105
Spencer ... 12- 9-5	4	1,340
Crosbie:		
Bryant ... 9- 9-5	2	0
Empire:		
Barker ... 12- 9-5	1	880
Edmondson ... 3- 9-5	3	955
Gypsy:		
Bora ... 16- 9-5	1	0
Bruner ... 10- 9-5	4	2,975
B. Carter ... 11- 9-5	9	3,530
Earl ... 16- 9-5	1	20
Hunick ... 5- 9-5	1	2,135
Noble ... 12- 9-5	4	3,312
Peter ... 10- 9-5	3	217
Sango ... 1- 9-5	5	4,157
State ... 16- 9-5	4	992
Independent:		
Bruner ... 10- 9-5	4	270
Sullivan ... 10- 9-5	3	84
Knapp ... 8- 9-5	4	1,938
Independent-Margay:		
Gains ... 11- 9-5	4	1,085
Interocean:		
Payne ... 12- 9-5	1	0
Magnolia:		
Bryant ... 9- 9-5	6	1,475
Cowden ... 4- 9-5	4	75
Dixon ... 12- 9-5	1	0
Edmondson ... 3- 9-5	3	28
Holmsley ... 11- 9-5	8	2,109
Hyde ... 13- 9-5	1	1,689
Ingram ... 10- 9-5	1	30
Lena ... 19- 9-5	3	70
Seay ... 12- 9-5	9	3,901
Simpson ... 10- 9-5	3	302
Sparks ... 11- 9-5	7	1,075
Sullivan ... 12- 9-5	3	20
Mid-Continent:		
McCumber ... 9- 9-5	7	375
Mid-Kansas:		
Anderson ... 14- 9-5	3	140
Phillips:		
Dunaway ... 14- 9-5	1	30
Gram ... 9- 9-5	4	15
Prairie:		
Baker ... 24- 9-5	1	60
Davis ... 13- 9-5	5	3,815
C. Graham ... 3- 9-5	2	35
O. Graham ... 10- 9-5	4	1,690
Stidham ... 11- 9-5	13	4,205
Roxana:		
Bayless ... 17- 9-5	1	10
Spencer ... 12- 9-5	2	1,568
Shaffer:		
Clark ... 1- 9-5	5	708
Sinclair:		
Foreman ... 18- 9-5	1	15
Hollins ... 12- 9-5	2	8
Sango ... 2- 9-5	3	5,000
Skelly:		
Spencer ... 12- 9-5	1	693
The Texas Company:		
Anderson ... 2- 9-5	7	835
Brown ... 10- 9-5	8	2,030
Rogers ... 5- 9-5	4	3,400
Wilmott ... 10- 9-5	7	1,125
Tidal:		
Watkins ... 9- 9-5	8	3,305
Twin S ates:		
Barker ... 12- 9-5	3	100
Hern ... 2- 9-5	4	1,900
Total ...	285	93,260

Seminole Pool

Amerada:		
Fixico ... 23- 9-6	4	1,046
Killingsworth ... 23- 9-6	4	521
Rentie ... 23- 9-6	3	759
Atlantic:		
N. Cudjo ... 35- 9-6	3	407
Barnsdall:		
Carter ... 24- 9-6	5	1,101
Henry ... 14- 9-6	2	506
Jones ... 34- 9-6	4	1,035
Carter Oil:		
B. Carter ... 24- 9-6	2	220
F. Carter ... 33- 9-6	3	95
J. Carter ... 24- 9-6	3	12
Creamer ... 34- 9-6	2	30
R. Cudjo ... 35- 9-6	4	195
W. Cudjo ... 34- 9-6	2	3
Gilliland ... 27- 9-6	1	360
Grisso ... 23- 9-6	5	576
M. Grisso ... 15- 9-6	1	260
G. F. K llings ... 14- 9-6	4	455
M. E. Killings ... 23- 9-6	12	6,065
Knapp ... 13- 9-6	3	48
Lukes ... 27- 9-6	7	1,255
Pounder ... 34- 9-6	2	40
Simpson ... 35- 9-6	3	40
Strothers ... 34- 9-6	4	360
Vierson ... 23- 9-6	3	335
Empire:		
Gross ... 35- 9-6	3	70
Wilson ... 34- 9-6	2	224
Gypsy:		
Butler ... 35- 9-6	4	1,195
Carter ... 24- 9-6	5	544
Cudjo ... 34- 9-6	5	395
Fixico ... 26- 9-6	7	195
Harjo ... 25- 9-6	3	1,000
Wolfe ... 26- 9-6	6	267
Independent:		
P. Fixico ... 23- 9-6	3	360
Harjo ... 25- 9-6	2	190
Butler ... 35- 9-6	3	800
T. Fixico ... 26- 9-6	8	690
Jones ... 26- 9-6	4	388
I. T. I. O.:		
Allen ... 25- 9-6	2	377
Bowlegs ... 26- 9-6	12	2,679
Goodin ... 23- 9-6	4	464
Harjo ... 23- 9-6	3	112
James ... 24- 9-6	2	276
Reed ... 24- 9-6	1	12
Kingwood:		
Johnson ... 22- 9-6	3	1,297
Magnolia:		
Boren ... 2- 8-6	1	26
Franks ... 25- 9-6	4	816
Mid-Continent:		
Rentie ... 14- 9-6	9	630
Tayeche ... 24- 9-6	7	275
Mid-Kansas:		
Johnson ... 25- 9-6	2	5
Ph llips:		
Strothers ... 27- 9-6	2	175
Prairie:		
Gross ... 25- 9-6	5	105
Mason ... 36- 9-6	1	30
Spencer ... 13- 9-6	1	13
Strothers ... 27- 9-6	8	1,305
Pure Oil:		
Strothers ... 26- 9-6	17	6,360
B. Strothers ... 36- 9-6	5	1,922
C. Strothers ... 34- 9-6	1	479
Roxana:		
Harber ... 22- 9-6	2	354
Lasley ... 22- 9-6	2	28
Sinclair:		
Carter ... 13- 9-6	2	25
Cudjo "A" ... 35- 9-6	6	1,030
Cudjo "B" ... 35- 9-6	4	1,400
Dicey ... 22- 9-6	2	1,260
Fixico ... 23- 9-6	4	950
Slick:		
Cudjo ... 35- 9-6	3	710
Franks ... 35- 9-6	7	1,769
Giblet ... 35- 9-6	3	1,780
Tiger ... 1- 8-6	1	66
Superior:		
Cudjo ... 35- 9-6	4	819
The Texas Company:		
Mayhue ... 14- 9-6	1	300
Strothers ... 2- 9-6	1	130
Tidal:		
Carter ... 24- 9-6	4	689
Fixico ... 26- 9-6	6	1,150
Harjo ... 25- 9-6	3	745
T. Harjo ... 23- 9-6	6	100
Mahardy ... 24- 9-6	2	30
Turman:		
Cudjo ... 35- 9-6	4	1,135
Grissco ... 35- 9-6	1	221
Jones ... 34- 9-6	4	1,428
Total ...	309	55,468

Searight Pool

Amerada:		
Johnson ... 4- 9-6	1	65

Strothers	3- 9-6	2	1,044
Carter:			
Davis	4- 9-6	6	825
Frazier	3- 9-6	6	2,995
Johnson	3- 9-6	1	5
Kiker	2- 9-6	1	25
Mandler	3- 9-6	2	25
Scott	26-10-6	1	20
Gypsy:			
Cudjo	4- 9-6	3	732
Mid-Continent:			
Grayson	34-10-6	6	50
Davis	33-10-6	4	1,265
Pine:			
Lula	4- 9-6	1	30
Prairie:			
Cannon	33-10-6	1	10
J. Carter	10- 9-6	1	15
Touch	33-10-6	1	4
Kincaid	33-10-6	5	65
Varnum	5- 9-6	1	30
Wimer	22-10-6	1	20
Pure:			
Aldridge	3- 9-6	5	3,256
Roxana:			
Strothers	3- 9-6	4	1,230
Sinclair:			
Polly	3- 9-6	4	1,805
Superior:			
Varnum	4- 9-6	1	0
The Texas Company:			
Fleet	4- 9-6	1	37
Twin States:			
Varnum	4- 9-6	2	328
Wilcox:			
Chupco	4- 9-6	8	2,348
Total		70	16,227

Totals

Field—	Wells	Prod.
Little River	109	41,507
Maud	2	350
Bowlegs	312	71,713
Fairlsboro	285	93,256
Seminole	309	55,468
Searight	70	16,227
Grand total	1,087	278,521

ROCKY MOUNTAIN AREA

(Continued from Page 60)

ated by the Ohio Oil Co., encountered another gas sand at 1,786 feet, being 10 feet thick, which made approximately 4,000,000 feet a day. This is believed to be a stray sand as it does not correlate with the wells drilled on the Colorado side. The gas is reported to have been rich in gasoline content. The Producers & Refiners' No. 1, SE Section 26-20-104, North Baxter Basin, joint with Marland Oil Co., is drilling at 600 feet in shale.

Big Horn County

Big Horn County shows an increased activity in the old Torchlight Field near Basin. The Producers & Refiners Corp. is rigging up for its No. 39, Section 24-51-93, and R. H. Lent has made a location for a deep test on Lot 8, Section 30-51-92. A. D. Schendel and others have moved in two rigs on Section 24-51-92, both being intended for shallow wells. The Producers & Refiners' No. 3 Garland, Section 24-56-98, is drilling at 1,700 feet in brown shale, and the Utah Southern Oil Co.'s No. 3, Section 29-56-97, Garland Dome, is drilling at 2,815 feet with some water in the hole, the cement job not having been satisfactory.

The Teapot Consolidated Oil Co.'s No. 1 Beaton, NE Section 2-38-78, northeast of the Naval Reserve in Natrona County, appears to be a good shale well at 2,700 feet. It has not been tested but looks as if it might be good for 100 bbls.

New Mexico

Southeastern New Mexico had a quiet week in which no completions were reported, but in which several new locations were announced. One of these were Flynn, Welch & Yates' No. 1 Jackson, C NE, Section 13-17-30, about 12 miles northeast of the Artesia Pool and 4 miles west of the Skelly Oil Co.'s No. 1 Beulah Lynch in Section 22-17-31, and another is Phillips and Welch Brothers' No. 1, NE NW, Section 2-18-28, northeast of the Artesia Pool, both in Eddy County. The Pueblo Oil Co.'s No. 1 Gessert, NE NE NW, Section 1-17-31, which was held up for five months at 3,705 feet with a fishing job resulting from striking gas which blew the tools up the hole, has finished pulling the pipe and plugged the hole and rig is being built for No. 2 Gessert, 330 by 430 feet out of the NE NE NW corner of the same section. The Marland Oil Co.'s No. 1 Gardner, NE cor. SW, Section 34-23-31, is drilling in sand at 780 feet, and Snowden & McSweeney's No. 1 Lawrence, NW cor. NW, Section 35-20-29, is running casing at 1,400 feet. Hammond and others' No. 1 Miller, SE SW, Section 15-17-25, reported last week having 1,200 feet of fluid in the hole from a total depth of 1,825 feet, has plugged off the salt water at the bottom and is preparing to shoot the upper part of the sand. Levers & Carper's No. 6 State, SW NW, Section 3-18-28, is drilling below 800 feet, and Gates, Holman & Rehn's No. 1 Murdock, SW NE, Section 7-21-28, is drilling below 1,910 feet.

Lea County

In Lea County, the Maljamar Oil & Gas Co.'s No. 2 Beardsley, SE NE, Section 15-17-32, was shot in an effort to dislodge the tools which have tied up operations for some time. Total depth is 4,296 feet. The Midwest Refining Co.'s No. 1 State, NE cor. NE, Section 9-19-38, on the Hobbs high near Nadine, is still at 2,887 feet and is fishing for wire and cleaning out 160 feet off bottom. Cecil Bordages' No. 1 Hughes, Section 27-19-38, south of the Midwest test, has recovered tools and prong of grab and is fishing for wire at a total depth of 3,110 feet. The Marland Oil Co.'s No. 1 Eaves, SW NE, Section 19-26-37, is still shut down at 2,843 feet waiting for orders, and same company's No. 1 Seideman, SW cor. Section 4-25-36, is drilling at 1,175 feet in the red beds. The Marland's No. 1 Roberts, SW cor. SW, Section 20-23-35, is drilling at 1,480 feet in the red beds. It had a hole full of water and air pockets at 1,078 feet. Same company's No. 1 Sholes, NW cor. SW, Section 19-25-37, is rigging up. The Gypsy Oil Co.'s No. 1 State, SW cor. SW, Section 34-21-36, is rigging up. The Empire Gas & Fuel Co.'s No. 1 State, NE cor. NW, Section 8-21-35, commenced spudding April 10, and is drilling at 40 feet.

San Juan County

In the northwestern area in San Juan County, plans are reported under way for the erection of an absorption plant in the Kutz Canon district to handle the gas from three wells drilled during the past year or two in that district. These wells are A. Johnson, trustee's No. 1 Viles, SW, Section 34-29-11, the Senate-National-Congress interests' No. 1 Garland, SW NE, Section 34-29-11, and the New Mexican Eagle Oil Co.'s No. 2, NE NE, Section 22-28-11. The last named was completed some time ago and shut in. It is estimated capable of making 2,000,000 feet a day from sand at 597-602 feet. The Congress-National well was shut in at 2,000 feet, and had about the same flow of gas as the other well. The Johnson well is being completed. It gauged 4,686,000 feet at a total depth of 2,002 feet, but recent reports are to the effect that water has broken in from an upper horizon and that 3-inch tubing will be run and a packer used to shut off the water before calling it a completion. These interests are reported to have organized the Angel Peak Oil & Gas Co. and the Angel Peak Refining Co. to carry on development in the district and to install the gasoline plant. The first unit, which has been purchased in the Borger, Texas, Field, will be shipped to Gallup and trucked to the field. It will have a capacity of 5,000 gallons of gasoline per day. In this same district, the Co-Ne-Mo Oil Co.'s No. 1 Viles, SE SE, Section 28-29-11, is bottomed at 560 feet (corrected depth) where is has been delayed by a broken walking beam, and the Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor. Section 29-28-10, is drilling at 250 feet.

T. G. Nollsch's No. 1 Mullen, Section 21-29-9, in the Largo district, which has been shut down at 200 feet for the past month, is being abandoned and rig moved away. The Union Oil & Mining Co.'s No. 2 Pine, SE SW, Section 8-29-9, is cleaning out after being shot at 2,852-2,922 feet, but prospects for a commercial producer are not very encouraging. It has not yet been tested, but might make a 10-bbl. well.

Farmington District

J. F. Cross' No. 1 Blacklock, C SW SW, Section 15-29-11, in the Farmington district, is drilling at 870 feet with some gas showing. Gas was first encountered at 700 feet. The hole is giving some trouble from cavings. The Kirkland Drilling Co.'s No. 1 Hunt, SE cor. NW, Section 10-29-15, in the Fruitland district, was unable to overcome bad hole at 650 feet and has skidded rig and started a new hole 18 feet from the one abandoned. The Continental Oil Co.'s No. 17, Santa Fe Corp. lease, Section 2-29-19, Rattlesnake Dome, has made considerably better progress the past week and is drilling at 4,856 feet. R. W. Childers' No. 2, Southern Ute Indian lease, Westwater structure, is drilling at 1,100 feet.

In McKinley County, Jenkins Oil Co.'s No. 1 Hannett, SE cor. NE, Section 1-16-9, East Vogt structure, is reported being abandoned at 1,500 feet, having encountered water at 1,470 feet. Reliance Oil Co.'s No. 1 Valentine, Section 15-17-9, is drilling at 1,500 feet. H. L. Williams' No. 2 Pettitt, SW cor. SE, Section 30-18-8, Hospah Dome, is shut down at 1,795 feet with water and showing of oil reported in the top of the Hospah sand. Benedum-Trees' No. 1 Santa Fe Railway, SW cor. Section 19-17-9, on the Ambrosia Lake structure, is reported to have encountered water at 2,900 feet and probably will abandon.

Utah

The Crystal Carbon Co.'s No. 6, Section 14-20-21, on the Cisco fold, in Grand County, was completed as a gas well the past week. The Dakota sand was topped at 2,265 feet and after drilling in the well made 2,000,000 feet initially. This is the first of a series of six wells to be drilled this year on the structure to increase the supply of gas for its carbon plant. The Phillips Petroleum Co.'s No. 1 Schirk, C NE, Section 16-27s-16, on the Barrier Creek anticline, in Wayne County, that company's first operation in Utah, was scheduled to commence spudding April 18. The location for this well was made last November, but it was necessary to build roads to the site before material could be moved in and the process of getting ready to spud was a long and tedious one. The structure is one of several in the Nequoiah arch farther to the west than where most of the wildcatting has taken place in the past few years. The structure was geologized by H. W. C. Prommel and H. E. Crum. The first objective is the Shinarump at 1,850 feet, and the Hermosa, of Pennsylvanian age, is expected at 4,300 feet.

The Diamond Oil Co.'s No. 3 Buskirk, NE, Section 29-8s-5e, Utah County, is drilling at 1,300 feet and making 25 to 35 feet a day with the first objective expected at 1,600 feet. The Maud Ellen Oil Co.'s No. 1, Section 28-3s-21e, Neal Dome, Uinta County, is drilling at 800 feet in a very hard formation. The Midwest Exploration Co.'s No. 3 Ashley Creek, Section 23-5-22, Uinta County, has been plugged back to 1,683 feet from a total depth of 2,720 feet, and is waiting for cement to set. It had a flow of 29,000,000 feet of gas in sand above the plug which will be saved. Same company's No. 1 Early, SE SW, Section 13-4s-6w, Duchesne structure, is drilling at 3,780 feet in gray shaley lime. It had water in the hole at 3,740 feet. This is a Tertiary test and is below the contract depth, but is continuing.

Wayne County

The Texas Production Co.'s No. 1 Shipley, Section 5-27-14, in Wayne County, is shut down at 2,885 feet waiting for material. The Continental Oil Co.'s No. 1, SW, Section 23-43-22, Boundary Butte, San Juan County, is drilling at 3,760 feet, having made very little new hole the past week. The Utah Southern Oil Co.'s No. 1-A John L. Shafer, Section 36-26-20, Cane Creek Dome, is drilling at 855 feet in lime, the formation continuing to be very hard which makes the progress slow. Same company's No. 1 King, Section 18-23-21, flank test on the Salt Valley Dome in Grand County, has completed road and is moving in material. Spudding is expected to begin about May 1. The Boulder Knoll Oil & Gas Co.'s No. 1, Section 17-34-25, on the Boulder Knoll structure near Monticello, in San Juan County, which has been delayed for some time at around 2,200 feet, has finished running casing and is again drilling, the depth being 2,225 feet. It had water in the Dakota and is drilling to the Shinarump expected at 2,500 feet. The 6¼-inch casing is being carried.

Colorado

Drilling operations in Colorado revealed nothing out of the ordinary for the past week, the only completions being in the Florence and Tow Creek Pools. In the Tow Creek Pool the Texas Production Co.'s No. 1 Henry Dennis, NE cor. Section 18-6n-86, was completed at 3,010 feet and made 80 bbls. initial. This well was deepened from 2,597 feet, at which depth it was originally completed in June 1926, starting out as a 343-bbl. pumper and climbing until it flowed 1,005 bbls. natural in 24 hours, its highest record. The Texas Production Co. is increasing its activity in this pool, which so far has produced only from the shale. It is moving in materials for No. 5 Quaintance, in the NE Section 18-6-86, being 585 feet from the south line and 200 feet from the east line of the quarter. The same company's No. 4 Belle Dennis, NE SE Section 7-6-86, which is to be a deep sand test, is spudding at 70 feet, and its No. 3 Adair, SW cor. Section 8-6-86, which is being deepened from 2,640 feet, is drilling at 2,970 feet. Same company's No. 4 Quaintance, NE cor. Section 18, is rigging up to clean out. It was completed last fall at 2,635 feet and swabbed 250 bbls. Same company's No. 1 State, NW cor. SE Section 18-6-86, which has been shut down at 2,114 feet on account of litigation since November, 1926, is expected to resume shortly. This is state land upon which William and Thomas Driscoll obtained title to the surface rights in 1917, the State Land Board reserving the mineral rights. The question as to the board's power to make such a reservation was taken into the courts. The legislature subsequently in 1919 gave the right to the board and validated its acts. The matter was finally taken to the United States Supreme Court, and a decision was rendered the past week sustaining the land board. The only operation at Tow Creek other than that of the Texas Production Co. is the Western Oil Co.'s No. 1 States, SE NW Section 17-6-86, which is drilling at 2,425 feet.

Pole Mountain

The Producers & Refiners Corp.'s test on the Pole Mountain anticline in Jackson County will soon be under way. Final location has been made on the Stella G. Fuller farm in the SW NE Section 2-6n-81, the footage being 2,340 feet from the north line and 570 feet from the west line of the NE of the section. The test will be started in a 20-inch hole and will be drilled with cable tools. The Dakota series and possibly lower horizons are the objectives, the estimated depth to be drilled being 4,000 feet. The Pole Mountain structure lies on the southwest flank of the North Park Basin, while the McCallum, or Waldon Field of the Continental Oil Co. lies on the opposite flank. The Walton operation shows no material change from last week.

The Continental Oil Co.'s No. 1 Hoye, SW NE Section 34-9n-78, the discovery well on the South McCallum Dome, which came in as a gasser two weeks ago at 4,875 feet, was cleared of the tools and bridge and was drilled 2 or 3 feet deeper when it again bridged. Before bridging the second time the flow of gas had increased considerably and oil was being sprayed, but it was impossible to estimate the quantity. The intentions are to carry the well on down to the main Dakota sand if possible. The Continental's No. 1 Peterson, SW SW Section 1-9-79, on the north dome, is still shut down and blowing carbon dioxide gas with oil, but preparations are under way to kill the well so it can be carried on down to the next sand where it is hoped to escape the carbon dioxide gas. The Continental's No. 1 Pollock, SE SE Section 2-9-79, is still fishing at 4,890 feet. The North Park Oil Co.'s No. 1 Goettler, NE SE Section 9-6n-82, Crosby Draw Structure, is drilling at 712 feet with the Dakota expected within the next 100 feet.

Moffat County

In Moffat County, the Texas Production Co.'s No. 17 State, NW SE Section 15-4n-92, on the Iles Dome, joint test with the Kinney-Coastal Oil Co., is drilling at 3,322 feet and is at a depth where the next 100 to 200 feet ought to reveal something of interest. Same company's No. 6 Parkinson, NW NW Section 23-4-92, is drilling at 2,930 feet, and its No. 13 Parkinson, NE SW Section 22-4-92, is bottomed at 3,031 feet and underreaming at 3,015 feet. The Midwest Refining Co.'s No. 8-SD-2 Parkinson, NW Section

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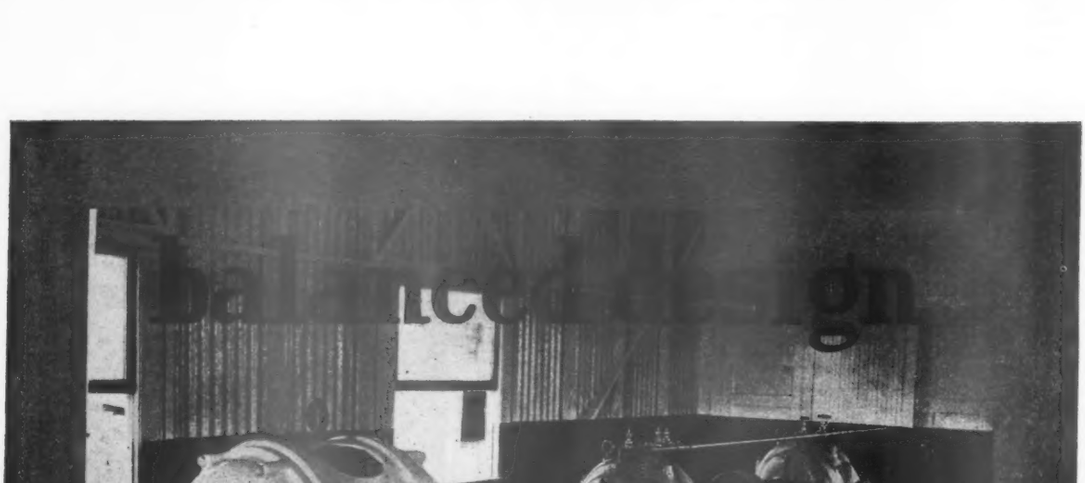

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BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

23-4-92, has finished running the 12½-inch at 2,200 feet, and its No. 7-SD Parkinson, NW Section 23-4-92, has cemented the 10-inch at 2,830 feet. The same company's No. 33-SD Parkinson, SW SE. Section 22-4-92, is drilling at 2,360 feet in gray sandy shale. Same company's No. 4-M Shaw, NE Section 27-4-92, is trying to drill by bit at 3,278 feet, the tools being caught by a cave. The former depth was 3,280 feet and the tools were run with the intentions of drilling deeper. The Shaffer Oil & Refining Co.'s No. 205 Yarg, NW Section 26-4-92, the well being more closely watched than any other at this time, is bottomed at 3,720 feet and underreaming to lower the 6¼-inch to bottom where it will be mudded. The hole is in a sandy shale which according to the log of No. 21-SD Parkinson lies just above the Morrison sand. It has been delayed by the water breaking in back of the 6¼-inch casing, this water apparently coming from the Dakota sand above. This well is down structure and if it comes in a producer it will mean the addition of close to 1,000 acres to the probably productive area. The Alliance Oil Co.'s No. 1 Milliken, SW cor., Section 14-4-92, is drilling below 2,740 feet. While several structural tests are scheduled for Moffat County this summer, none of the locations outside of the Iles Pool have been announced. The Hiawatha Dome drilling is confined to the Wyoming side at present, but it is reported that the Reiter-Foster Oil Co.'s No. 1 State, SE cor., Section 16-12n-100, will resume shortly. It has been shut down for the winter in a water sand at 2,174-2,215 feet.

In Rio Blanco County, the Midwest Refining Co.'s No. 2 Rangely, Section 30-2n-102, is still having trouble at 3,473 feet, and the 4¾-inch casing is being pulled for the second time. The work at present is to get a shutoff of the Morrison formation which had considerable gas and a show of oil, and go on down to the Sundance. The Texas Production Co.'s No. 1 Freeman, Section 27-3n-94, Wilson Creek structure, is bottomed at 5,559 feet and is underreaming the 6¼-inch at 5,495 feet.

Florence Field

In the Florence district in Fremont County several completions have been reported. The G. & L. Oil Co.'s Constantino, has 200 feet of oil in the hole at 1,530 feet, and Brown Brothers & Williams have what appears to be a 50-bbl. well at 1,235 feet. Both of these are in the Canon City area. The Continental Oil Co.'s No. 1 Andy Smith, SW SW, Section 3-19-70, in the west extension, is dry and abandoned at 2,800 feet. The same company's No. 1 Adamic, NW NW, Section 12-19-70, is drilling at 2,335 feet, and its No. 2 Dunn, NW SE. Section 35-18-70, is drilling at 1,275 feet. Same company's No. 1 Machetti, SW NW, Section 2-19-70, is drilling out cement at 1,545 feet, and its No. 1 Dalfior, SE NE. Section 3-19-70, is drilling at 1,410 feet. The Continental's No. 3 David Hall, NW SE, Section 35-18-70, is drilling at 1,100 feet, and its No. 1 Bromwell, NW SW, Section 3-19-70, is drilling at 915 feet. The Continental has a rig up for its No. 1 Dunlop, in the SW SE. Section 3-19-70. The Texas Production Co.'s No. 2 Wilson, SE NW, Section 35-18-70, is shut down at 2,366 feet, and its No. 1 Castagna, NW SE, Section 3-19-70, is drilling at 1,070 feet. Same company's No. 1 Ott, SW SE, Section 3-19-70, is drilling at 765 feet, and its No. 1 Dunlop, NW SE, Section 3-19-70, is drilling at 435 feet. The Phantom Petroleum Co.'s No. 1, SE NE. Section 34-19-69, is drilling at 1,510 feet, and its No. 1 Green, NW NE. Section 10-18-70, is drilling at 1,800 feet. The Pleasant Oil & Lease Co.'s No. 1 Ketchum, NE SE. Section 35-18-70, is showing for a 15-bbl. well at 1,230 feet, but will be drilled deeper. The Lillian Oil Co.'s No. 1 D. A. Hessick, NE NW, Section 21-19-69, about 2 miles south of production, was dry and abandoned at 2,140 feet. The Canon City Oil Co.'s No. 1 on the Denver & Rio Grande Western right of way, SW SE, Section 35-18-70, is drilling at 1,710 feet. W. F. McCormick's No. 1 York, NW NW, Section 3-19-70, (formerly Uncle Joe Oil Co.) has suspended drilling at 4,565 feet. It had a show at 1,899 feet, and was drilled down as a Dakota sand test, the first sand well to be drilled in that area. W. M. Conley's No. 5 Hassler, Section 21-20-69, has 450 feet of oil in the hole at 2,050 feet. It had a show at 1,936 feet, but was soon pumped down.

Las Animas County

In Las Animas County, the Phillips Petroleum Co.'s No. 1 Haskins, Section 23-29-56, Red Rocks structure, which was in a hard formation at around 1,175 feet in which only 6 inches per day could be made, has passed out of that horizon, and is in red rocks at 1,545 feet and making much faster progress. On account of the hard formations and the dips, this test has had considerable trouble with a crooked hole, but it now appears to be straightened out. Efforts are being made to resume work on the Foley & Goldsworthy's No. 1 Government, NE NW, Section 11-30s-60, which has been shut down at 2,010 feet for several months on account of financial difficulties. The Model Dome Oil Co. has been formed to take over the property and to drill an additional 1,000 feet. Plans provided for the raising of $20,000 among citizens of Trinidad.

S. H. Keoughan, president of the Continental Oil Co., is the latest oil official to take to the air. While in California recently he placed an order for a Ryan monoplane of the same type as Col. Charles A. Lindbergh's new plane. It arrived in Denver this week from the factory with Lieut. Carl C. Reavis, a Denver pilot, in charge. He made the trip alone and was in the air for 11 hours from San Diego, one stop being made at Salt Lake City. The plane has a capacity for five passengers and will be used by Mr. Keoughan for company business as well as for the pleasure of himself and friends. It is not his intentions to fly the plane himself but will leave that part of it to Lieutenant Reavis.

Montana

The Genou Oil & Gas Co.'s No. 3 well on the Bannatyne Dome, northern Montana, was given a test this week and showed for a 75-bbl. producer. The well is located on the SE of Section 5-25-1, not far from No. 2. No. 3 is a better producer than either of the other wells in the field, total production of the two being about 60 bbls. The test was an exceedingly fair one as the well was allowed to produce 24 hours before the test was begun.

The Hardrock Oil Co. well on the same section, also offsetting No. 2 Genou, found the Emrick sand at 1,436 feet. At a depth of 71 feet in the sand the hole filled up with oil for a distance of 400 feet. This is about the same condition that prevailed at the Genou's No. 3 before it was shot, indicating that the Hardrock well will probably make as good a producer as the last Genou completion. Arrangements were made to shoot the Hardrock well, after which it would be cleaned out and tested, but the derrick collapsed while casing was being lifted and it will be several days before work at the well can be resumed. The accident might have been a catastrophe, for in addition to the narrow escape of the two men in the rig, a 200-quart shot of nitroglycerin was on the derrick floor ready to be lowered into the hole. Luckily it did not let go, in spite of the heavy jar when the rig collapsed. There were perhaps two dozen spectators about the derrick when the crash came.

The Continental Development Co. reports striking salt water in a stray sand at 2,350 feet on the Pendroy structure, adjoining the Pondera Field. This is the first time salt water has been encountered in the Sweetgrass Hills district. The sand carrying the water lies 50 feet below the Sunburst sand and 150 feet above the Ellis-Madison contact where oil is expected. The company's geologists state that in their opinion the finding of salt water does not indicate failure to find oil, considering it rather as an indication of a closed structure.

Pondera Dome

The Fulton well on the Pondera Dome is still flowing about 30 bbls. a day but is not being pumped on account of lack of storage facilities. Oil from this well is being used for fuel for the four wells drilling on the structure and it is probable it will be put on regular production for this purpose. The Fulton well is expected to make 75 bbls. settled production, having produced about 6 bbls. an hour on initial test. The Elliott well, a half mile east of the Fulton well, will probably be the next completion in the field.

Northern Montana has had some bad weather the past week, but field work has not been retarded to any great extent. The Crumley well on Section 29-35-2, Kevin Sunburst Field, will probably make a 50-bbl. well, settled production. This well is a quarter mile west of the large production found in the Moe Lorenson Pool, and proves up some additional territory. The California Petroleum and the Texas Pacific will offset the Crumley well.

According to late reports, not yet confirmed, the Etheridge Steel No. 1 on Section 12-34-2, came in a gusher late this week. The well was out of control for several hours, decorating the landscape with crude oil. It is now under control and will be tested, but estimates on initial production ran up into the thousands. This well is in the vicinity of some very good wells.

Kevin Sunburst

Several small wells are reported from the Kevin Sunburst Field. The Ohio Oil Co. reports a 45-bbl. well on Section 15-35-2, Emmert lease. The same company brought in a 4,500,000-foot gas well on Sunburst acreage in Section 1-32-2. The Texas Pacific completed a small well on State land in Section 36-35-2, and the Fifty-Six Petroleum has a 10-bbl. well in its No. 38 Caine.

The Minnesota's No. 1 Zimmerman, on Section 29-35-2, a half mile west of the Crumley well, is shut down with considerable oil in the hole. The Jones Skinner well on Section 17-34-1, will be plugged back and saved for a gas well. The Hannah Porter No. 3 Hannah, on Section 18-34-1, was shot and failed to develop production, so it was plugged back to the Sunburst and saved for a small gas production.

The Big Dome Oil Co. well on the Bowdin Dome will be completed this summer, the Big Dome having contracted the completion of the well to other interests. The Commonwealth Petroleum well on the Devon structure had drilling troubles and it was necessary to move the rig to another location.

The Hope Engineering Co. crews are at work connecting the gas wells in the Kevin area to the Great Falls line. The entire system will be completed by May 1 and ready to furnish gas if the rate controversy can be settled. The status of the rate situation seems to be unchanged with the gas company "standing pat" and the Chamber of Commerce ready to appeal to the State Public Service Commission.

An interesting case affecting royalties in Montana was decided in the State Supreme Court of Montana this week. The owner of a substantial royalty in a certain tract had assigned a 4½ per cent royalty to an operating company, which, when the lease expired, claimed that its interest in the land was eight times what it had previously been, and asked for a 36 per cent royalty. It is understood that about 1,000 similar royalty contracts are in effect in the Kevin Sunburst Field. The court decided that the defendant in the case was entitled to only the original 4½ per cent royalty.

ROCKY MOUNTAIN PRODUCTION
Runs From the Field, Week Ending April 21

Wyoming	
Salt Creek	40,820
Big Muddy	2,700
Grass Creek	2,610
Elk Basin	1,090
Greybull	20
Rock River	2,460
Lance Creek	740
LaBarge	850
Poison Spider	290
Hamilton Dome	1,230
Oregon Basin	0
Osage	390
Lander	670
Ferris	80
Byron	40
Lost Soldier	4,750
Simpson Ridge	40
Total Wyoming	58,770
Montana	
Cat Creek	1,770
Lake Basin	160
Kevin-Sunburst	10,000
Total Montana	11,930
Colorado	
Florence	1,255
Moffat	1,563
Fort Collins	2,876
Iles Dome	457
Rangely	100
Tow Creek	378
Boulder	25
Total Colorado	6,654
New Mexico	
Rattlesnake	250
Hogback	510
Cap Rock	185
Table Mesa	174
Artesia	1,147
Total New Mexico	2,206
Total Rocky Mountain	79,560

EAST CENTRAL TEXAS

MEXIA, Tex., Apr. 21.—Recent completions in the East Central Texas area have been few. Wheelock and others' No. 1 T. C. Boyd, Gragg Survey, in Limestone County, cored a salt water sand at 3,381 feet and was abandoned as a failure. Dillon & Hammond's No. 1 Fenner, Hoskins Survey, Limestone County, was abandoned at 2,931 feet. It had been shut down since October 7, 1927. A number of new operations have started in the area including J. C. Rogers' No. 1 J. C. Boyd, Montgomery Survey, Camp County, which is shut down at 1,100 feet; Joe Walton's No. 1 Rucker, Reese Survey, Cherokee County, drilling in sand rock topped at 1,185 feet; Groesbeck & Chisholm's No. 1 Marlin National Bank, Smith Survey, Falls County, top of the Georgetown lime at 2,402 feet, shut down at 2,440 feet; Yost and others' No. 1 Poindexter, Block 17 Flippen Survey, Limestone County, drilling below 1,650 feet; Humble Oil & Refining Co.'s No. 1 Lassiter, Herring Survey, Smith County, drilling in shale below 400 feet; Gulf Production Co.'s No 2 McCammond, Moore Survey, Smith County, rigged up.

The Humble Oil & Refining Co.'s No. 1 Mandleston, Roberts Survey, Anderson County, was drilling below 1,900 feet in shale. The Pure Oil Co. was drilling in shale below 2,500 feet in No. 1 Henry Unfried, Neill Survey, Limestone County. F. C. Lytle has commenced drilling No. 1 Thompson, Varella Survey, Limestone County.

SOUTHWEST TEXAS PRODUCTION

SAN ANTONIO, Tex., Apr. 23.—Production of crude oil from all the pools in Southwest Texas for March compared with February was as follows:

	No. Wells	Barrels Dy. Av.
March—		
Luling	558	13,918
Mirando	682	5,838
Lytton Springs	304	1,484
Somerset	...	1,884
Dale	26	1,039
Kingsville	...	325
Southton	60	159
Calliham	44	114
February—		
Luling	556	14,145
Mirando	670	6,393
Lytton Springs	304	1,530
Somerset	...	1,952
Dale	22	845
Kingsville	...	325
Southton	60	163
Calliham	44	47

PASOTEX LINE BEGUN

FORT WORTH, Tex., Apr. 21.—Actual construction has begun on the eastern end of the 200-mile Pasotex pipe line from Winkler County to El Paso.

The Oklahoma Contracting Co., which has the contract to build 80 miles from Wink west, has begun laying the 8-inch pipe at a depth of 28 inches. The ditching machine has dug out 3 miles of ditch in the last three days.

This line will connect with the line coming east from El Paso and will require about three months to complete. Right of way is being secured for the river crossing at Orla, about 25 miles north of Pecos.

Fig. 325
Screwed, Jenkins Standard Iron Body Gate Valve

From field *to* filling station

From rough and ready duty in the field to the daily severities of filling station usage, Jenkins Valves serve the oil industry in its many phases.

Jenkins Valves give the petroleum engineer a chance to put equipment to work that is specifically intended for oil use.

Let your order read Jenkins "oil-tested" Gate Valves and you will be sure of getting a valve that has already won its spurs in oil service. And every Jenkins oil-tested valve is oil-packed, too.

Jenkins Valves are furnished in bronze and iron, in standard, medium and extra heavy patterns—at supply houses everywhere.

JENKINS BROS.

80 White Street ..... New York, N. Y.
524 Atlantic Avenue ..... Boston, Mass.
133 No. Seventh Street ..... Philadelphia, Pa.
646 Washington Boulevard ..... Chicago, Ill.

JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

PLAN FOR GREATER GALLONAGE ENDORSED

(Continued from Page 37)

may need. At Russellville there is a hotel that would be a credit to a city.

Highway Touring

"The real shortcoming in most highway towns is good restaurants. It is not so much the food that is served, but the place and manner of its serving. One cannot reasonably object to the lunch counter, for the lunch counter is almost everywhere; but few of these places are attractive places to eat, and it would be easy and inexpensive to make most of them much more desirable places to stop for a meal.

"Then there sometimes are rather pitiful efforts to please the patrons. There is a cafe on the Arkansas highway between Fayetteville and Little Rock where the proprietor serves rather exceptional meals, but he must needs furnish music also, a metropolitan touch, no doubt, added for the especial benefit of travelers from the city. One of the waiters, and a mighty good one, doubles at the piano. He is accompanied by a banjoist. We do not know where the piano or the banjo came from, but we never have heard anything else quite so harrowing to the nerves. A placard invites you to ask for your favorite melody. You do not ask. You think too much of your favorite melody.

"But the comforts and conveniences of travelers will be met along the way as time reveals to the caterers the importance of greater attention to personal comforts and tastes. We may reasonably hope that in time the traveler may be as well cared for as is his car, which now may be fueled, oiled, cleaned or otherwise kept in condition almost anywhere along the way."

The suggestion is made that the oil industry can increase its business by getting behind this movement and acquainting the motoring public with the routes and condition of the roads, not mere mapping of the highways but attractive and detailed accounts of what may be seen along the way and the information that any intending tripper would like to have before he starts.

There is a whole lot in advertising what the people want. Advertising, it has been wisely said, cannot be forced upon a person against his will. Advertising that merely boasts of a particular product leaves the reader cold. He is not interested in competitive clamor. But he is interested in being told how he can enjoy himself by using something he buys. The philosophy and psychology of such advertising as applied to developing the sale of gasoline by greater use of cars is very clearly set forth in the article on this page from L. Ames Brown, first vice president, Lord & Thomas and Logan, one of the leading organizations in the country specializing in advertising.

WALL STREET VIEW OF OIL SECURITIES

(Continued from Page 38)

sufficient to make up for the prestige which stations lose by dropping known and popular brands and taking on an unnamed, or little known branded gas. This applies particularly to filling stations in the residential and suburban sections, where transient trade is not the big factor.

According to sentiment in both oil and financial circles, it is probable that a continued advance in gasoline prices, which now seems likely to be witnessed, will be accompanied by an upward revision in crude oil price schedules. Already the market position of "sweet" crude oil is strengthening, due to the enormous demand for gasoline. However, it is felt that the industry will go slow in the matter of a crude oil advance. As a result of these conditions, the companies which have most of their investment and interest in crude production are not expected to keep pace with the integrated companies in the matter of improved earnings.

Market Comparison

An interesting commentary on the improved sentiment affecting the oil shares is afforded by the accompanying table of 38 oil stocks, picked at random from those listed on the New York Stock Exchange and the New York Curb Exchange. This table shows the development of the upward movement in prices over the past month, the list including 33 advances and 5 declines for the period. In many cases, new highs for 1928 were reached during the period mentioned, while in practically all instances prices as of April 18 are substantially over the lows for 1928.

There is, of course, a bear element in the market which sees nothing but a long and extremely hard pull for the oils before they are again on anything like a sound basis. This clique argues that the present strengthening in the oils group is based on no fundamental improvement in the industry, but is based upon two factors; first, a seasonal and temporary gain in gasoline prices and sales; and, secondly, the temporary exhaustion of other stock groups which have recorded heavy gains in trading during recent months. Whether the bear element is sufficiently strong to combat the bulls on oils is problematical, but the outlook would not indicate any such development. Further curtailment of crude production in California, reduced output in West Texas, falling production at Seminole, and a drastic curtailment program in Venezuela are all constructive developments, and when taken with the higher market for gasoline and the record consumption of motor fuel, the market factors all seem to favor the constructionists.

Thus far, a good deal of the buying of the oils has been by professionals, as is usually the case in a market turn of this character. Talk of the "Sinclair Pool," the "Marland Pool," the "Skelly Pool," the "Standard Pool" and others too numerous to mention is now common gossip in financial circles, where a month ago the broaching of the subject of the oils was greeted with derision.

The public is coming into the market for the oils in much better volume than for a year past, according to reports in brokerage circles, and the extent of this buying will determine to a large degree the extent of the recovery in the oils.

Range of Oil Securities

Stock—	1928 Low	Mar. 16 Close	Apr. 18 Close
Amerada	27¼	29⅝	36½
Anglo-American	18⅛	20⅝	19½
Atlantic Ref'ning	95⅝	107¼	125
Barnsdall "A"	21¼	29⅝	25
Beacon Oil	12¼	12⅜	16½
Buckeye Pipe Line	58	65	74
California Petroleum	24	25⅜	30¼
Cities Service	54	58½	57⅜
Houston Oil	127	148	154½
Humble Oil	59¼	63¼	69½
Independent O. & G.	21⅜	26½	29
Maracaibo	12⅛	14⅛	17¼
Marland	33	35⅞	42¼
Mid-Continent	25⅛	27¼	30⅜
National Supply	90	95⅛	98⅜
Oil Well Supply	26	28⅜	29¼
Pan American Pet.	38¼	42⅛	48¼
Phillips Pet.	35⅛	39	42½
Prairie Oil	47⅝	48⅜	52¼
Prairie Pipe Line	184	219¼	216
Pure Oil	19	21⅞	24⅝
Richfield Oil	23⅛	29⅜	44½
Salt Creek Producers	28⅛	31¼	30½
Shell Union	23¼	25½	27⅜
Simms	18¼	19¼	23½
Sinclair	17⅜	24⅜	27½
Skelly	25	26⅞	32
Standard Oil of Calif.	53	55¼	60
Standard Oil of Ind.	70⅝	72⅞	78⅝
Standard Oil of Ky.	122¼	124	132¾
Standard Oil of N. J.	37⅝	39	43½
Standard Oil of N. Y.	28⅝	29⅝	32½
Sun Oil	31⅛	40⅜	43
The Texas Corporation	50	51⅝	59⅝
Tide Water Associated	14⅜	15¼	19⅜
Union Oil of Calif.	42⅜	48	55
Vacuum	136¾	143	151
White Eagle	20¼	22	22¼

BRADFORD PIONEER DIES

BRADFORD, Pa., Apr. 21.—Franklin D. Wood, 77, poineer oil man of the Bradford fields and also extensively known in the Kentucky fields, died here after an illness of two weeks. He had retained active management of his affairs until stricken ill. He came to Bradford in 1878. Mr. Wood organized and was president of the Wood Oil Co., and was interested in the Phoenix and W. C. Kennedy companies and several oil concerns in the Kentucky fields.

all over the world Madison-Kipp Lubricators are leading

Why

Fact 4

30 Years of Specialization in Force Feed Lubrication

In 1898, this company was organized to manufacture the Kipp Force Feed Lubricator.

The Madison-Kipp Lubricators have been continuously made since that time.

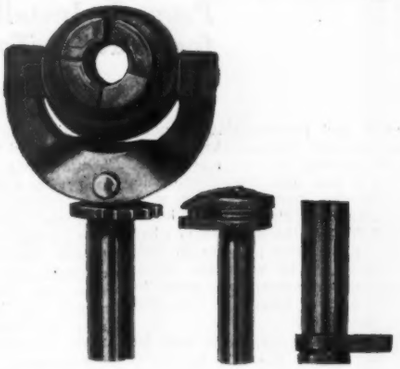
The design has been improved from time to time, but basically, the Madison-Kipp is still built on the same principle.

That is the principle of registering ports, the most positive method ever developed to feed oil under pressure, in all temperatures, and feed it accurately in metered quantities.

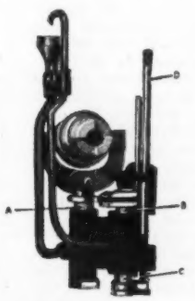
Thirty years have proved it right — so right that today, the Madison-Kipp Corporation is the largest manufacturer of Force Feed Lubricators for oil and gas engines and has maintained that position for a great many years.

Lubrication data, lubrication service and co-operative experimental work in lubrication is always available to engineers and manufacturers.

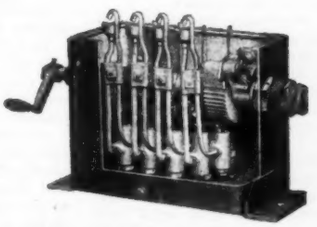
The Madison-Kipp is also the leading force-feed lubricator in the machine tool, printing press, woodworking and tractor fields



The basic elements of the Madison-Kipp pumping unit. The double eccentric with its universal jointed yoke and grooved pumping plunger—the suction and sight feed plunger and metering sleeve both showing their ports.



The pumping parts assembled into a complete pumping unit. "A" is the grooved pumping plunger, "B" the suction and sight feed plunger and "C" its metering sleeve.



Units assembled in a tank with one type of drive mechanism. In these three illustrations every important operating part is clearly shown.

There is nothing complicated either in design or operation, nothing apt to go wrong and very little to wear with the Madison-Kipp Lubricator

FRESH OIL

Madison-Kipp Lubricators

Lubrication Specialists Since 1898 *Madison, Wisconsin, U.S.A.*

Pipe Stills With Pennsylvania Crude

Properly Installed and Operated, Several Advantages Are Claimed for Latest Type Distillation and Fractionation Equipment

By Alfred Mulhaupt*
Kendall Refining Co.

Pipe stills and fractionating columns are being installed because they reduce the cost of refining oil. As recently as a year and a half ago, the question in the mind of the average refiner was, "Will they work on Pennsylvania lubricating oil?" Today, the question is what is the best type. The problem is still further complicated by what the motor and bearing manufacturers are going to do and what kind of lubricants they will require in the future.

On some types of engines it may be necessary to include the oils having a boiling point around 800 to 900 degrees Fahrenheit to insure lubrication under all conditions, even at the expense of slightly greater carbon formation. In others, an overhead distillate might be best adapted in which all the oil would volatilize at a lower temperature and thus reduce the carbon formation. If it is possible to decide the exact specification required, it is a simple matter to select a distillation unit to produce the results.

There does not seem to be any limit to the size of a pipe still unit with a single fractionating tower. At the present time there has been some trouble with the use of two coils in multiple in a single furnace, but this can be overcome by using an individual pump or orifice control valve to hold a constant throughput in each coil, which would permit three or four, or more, coils in multiple in an individual pipe still if desirable. The radiation losses do not increase in proportion to the throughput. The capacity of a plant of a given construction is roughly proportional to the internal volume of the tower, pipings and heating tubes, which is proportional to the cube of any dimension while the area of the furnace, hot pipes and towers is proportional to the square of the same dimension. This means that the radiating surface does not increase as fast as the volume, so that in a large unit the radiation loss is less than in a small unit, per barrel of throughput.

It requires practically the same number of men to operate a small unit as it does for a large unit. The fact that the pipe still unit lends itself to continuous operation permits the recovery of heat by pumping oil to be heated in thermal contact with oil or vapors to be cooled.

Batch distillation of crude to cylinder stock in a still can be carried on fairly economically, as far as fuel for combustion is concerned, providing each still is fitted with a flue gas recirculating system, an air preheater with forced draught fan, with everything well insulated, forced circulation of the oil on the bottom of the still, with vapor heat exchange, preheating crude for a second unit being warmed up. The cost of applying all these small units to batch stills is greater per barrel of throughput than that of a modern pipe still unit.

Cracking is a function of time and temperature. If you reduce the temperature, you must increase the time. For this reason most cracking plants have a reaction chamber, where the hot oil can remain for a more or less extended period until the cracking operation has had time to become completed. This reduces the temperature to which the oil must be heated and therefore coking of the tubes and formation of coke in the expansion chamber. The shell still has a long soaking period and the temperature to which the oil can be heated is lower than it would be if the oil were under high temperature for a shorter period, a minute or two. The maximum temperature being limited on the batch still, an enormous quantity of steam must be used to reduce the vapor tension to maintain the required low still temperature. This steam costs money, and it also costs money to condense the steam. A part of the heat of this steam can be recovered by running the stills in a continuous battery fitted with vapor exchanges, but this, if anything, would increase the time of soaking at high temperatures. Therefore, even though fairly high heat efficiency can be obtained by shell stills, they are more liable to injure the oil than a properly designed pipe still with fractionating column. Fifteen hundred barrels a day of crude throughput will show an earning in favor of such a unit. With batch stills, and no fractionating columns, certain products had to be re-run several times with the attendant cost, losses and reduction in color. When operating on crude for lubricating oils, it is usually desirable to operate in such a manner that the chemical nature of the oil is not changed.

Flash System

With an adequate fractionating column, the crude can be split up into its component parts with respect to boiling points. With a properly designed tower of this type, it should be possible to take a proportionate sample of each stream, put them together and have the resultant sample, virtually the same color and gravity as the original crude. A temperature of 730 degrees Fahrenheit with the flash system gives a better colored cylinder stock than 6,500 degrees Fahrenheit on a batch still, due to the short length of time the oil is at this temperature. The flash system uses the gasoline in the crude to reduce the boiling point of the cylinder stock and heavier oils, which causes them to vaporize with the use of a comparatively small quantity of steam at a temperature much below their boiling temperature at atmospheric pressure and in an atmosphere of their own vapors. This reduction in the boiling point is probably in the neighborhood of 100 degrees Fahrenheit.

In refining Pennsylvania crude it probably will always be most desirable to split the crude up without any pyrogenic decomposition. It is within the realm of possibility, however, that a refiner using a so-called naphthene base crude will be able to chemically transform his oil by means of a unit built for higher pressures and temperatures and adding hydrogen, so that he will take from the plant lurbicating oils having properties very similar to lubricants made from paraffin base oils.

If, for any particular oil, this soaking at high temperatures is desirable to give a darker color, or turn some components of the oil into resin or tar, it is only necessary to install a soaking drum between the pipe still and the tower.

Let's consider some of the things that happen in a pipe still operating under average conditions. Assume a pipe still running 2,000 bbls. of crude per day vaporizing 85 per cent and heating to 730 degrees Fahrenheit; suppose 2.7 per cent or 54 bbls. per day are being burned say with 12 per cent CO_2 and 20 per cent excess air. Assume that this fuel is being burned in one burner, the combustion will take place in the form of a cloud of luminous flame. The interior of this opaque cloud of gas may be at the full temperature of combustion as heat will not radiate through an opaque mass although the outer shell or envelope may be cooled by radiation. This cloud of luminous flame has the property of conveying at least twice as much heat to any tubes it happens to touch than the body of red hot transparent gas which surrounds it. Therefore, it should not be allowed to touch the tubes. The red hot transparent gases which are being produced in a constant stream are carriers of heat. Due to the fact that they are so hot they have a tendency to radiate heat to anything in sight.

The red hot bricks in the furnace wall radiate back heat towards these gases because, due to the thickness of the wall, the heat does not pass through the wall fast enough to cool the interior surface very much. The radiant bank of tubes which may be in the roof and part of the side walls are carrying oil at a much lower temperature than the flame. These tubes will have a cooling effect on the transparent red hot gases, red hot side walls and the outside lining of the cloud of luminous gas which will radiate heat from its outside surface through the transparent gases as though the latter were not present. All this heat transfer would take place if there were a transparent window covering the tubes, so that no hot gases could touch the radiant tubes. The rate of heat transfer due to radiant heat is 10 times as great at 2,800 degrees Fahrenheit as it is at 1,000 degrees Fahrenheit. If a large down draught suction pipe were inserted through the bottom of the furnace and all gases of combustion were removed so that none touched the radiant tubes, this radiant heat would still pass to the tubes in position to receive it. A given quantity heat is produced and it must go somewhere. If the absorbing surface is 1,000 square feet instead of 100, each square foot will only have to absorb one-tenth as much heat.

Furnace Design

It is possible by introducing enough steel tubes in the furnace to bring the furnace temperature so low that complete combustion would be difficult to secure, but, of course, this is not desirable. By making the radiant heat surface large enough, the furnace temperature can be reduced to a point where the gases produced by combustion of oil and air may be passed at comparatively low temperature over the connection bank which is shielded, that is, cannot "see" the cloud of flame. Radiant heat moves in a straight line although it may be reflected the same as light by a hot surface properly located.

Thus the designer of pipe stills has means of carrying on combustion with the minimum excess of air, high CO_2, and accompanying high fuel efficiency, and still maintain low rates of heat transfer without the use of recirculating flue gas equipment. These units running on cold crude will probably recover heat of vaporization that will bring the temperature of the oil charged to around 350 degrees Fahrenheit, which will give 150 degrees temperature difference between the oil charged and outgoing gases, which, in turn, would give a flue gas temperature of about 500 degrees Fahrenheit. This means a thermal efficiency of 70 per cent.

This type of equipment has a definite rating, which can only be exceeded at the expense of color, thoroughness of fractionation, or both. In selecting a unit, each individual tower or section of a tower should be large enough to handle the maximum quantity of oil that might be put through this particular stream. For instance, if you take the case of the top three sections of a tower designed to produce equal quantities of gasoline, naphtha and kerosene. If the market price should change to make it more profitable to take, say an increased quantity of gasoline, the section should be made large enough to give good fractionation at this maximum possible load. By using recirculating fans on the flue gas and firing with oil a furnace of smaller size can be built, but at the expense of power to circulate the gases, and increased liability of trouble due to failure of fans, etc.

Powdered Coal

By using the large fire box type, powdered coal can successfully be used as a fuel, providing the tubes are fitted with suitable soot blowers. Recirculating fans would not be necessary with powdered coal, as combustion can be carried on with a high CO_2 percentage without overheating the oil. Those units, taking oil at 600 degrees to 650 degrees would require air preheaters to recover the heat in the flue gas as the stock temperature would be from 750 to 800. The fan would work on cold air which is not so troublesome as hot flue gases.

Type of Tower

A packed tower must have a larger cross section area than a bubble tower, something on the order of 2½ to 1 to give the same results. The older literature on bubble towers laid a great deal of stress on the shape of the gas bubble coming through the body of liquid, but the modern bubble tower for oil is run at at a rate at which the liquid is more or less blown into a spray of small drops which object can be obtained with the proper design of bubble caps with the formation of a minimum quantity of fine mist that would pass on to the next tray. For this reason, fewer plates are used, spaced at greater distances than that used in the earlier towers.

In commercial practice as high as 95 per cent of the oil is vaporized in the pipe still before going to the fractionation tower. Under these conditions, the bottom section is a mist separator where the mist is the flux bottoms. To strip the lighter fractions completely in the bottom of the tower, superheated steam is introduced at a temperature of 700 degrees Fahrenheit. The same steam passes all the way up through the tower, helping to reduce the vapor tension of all the other fractions, giving up its heat in the gasoline vapor exchanger.

The exchangers and coolers for a unit of this size, except for the gasoline exchanger, are small compared to shell still operation, because the heat given up in condensing a pound of oil is from 140 B.t.u. per gasoline to 80 B.t.u. per cylinder stock, while the heat given up by one pound of steam is around 900 B.t.u. The steam is condensed only in the gasoline vapor exchanger.

Vapor Exchangers

Vapor exchangers are subject to some corrosion due to hydrochloric acid originating in the salt water generally found in crude oil. Whether or not these chlorides have a tendency to cause the oil to crack at a lower temperature, similar to the action of aluminum chloride is an open question. Except at the high temperatures in the pipe still, there is apparently little corrosion until that part of the tower is reached where the hydrochloric acid gas begins to condense. Most of this takes place in the gasoline vapor exchanger where water vapor dilutes the acid. The collapsing vapors cause a sort of a blast against the tubes which gives a combination of erosion and corrosion. If it is possible to locate a settling drum in the crude line through the vapor exchangers, at a point where the salt water would be dropped out, it would eliminate or reduce this corrosion.

A baffle, where the vapors enter, should be used to prevent the blast of vapors from heating directly on the tubes and thereby increase their life. When run-

(Continued on Page 152)

*Semiannual meeting, National Petroleum Association.

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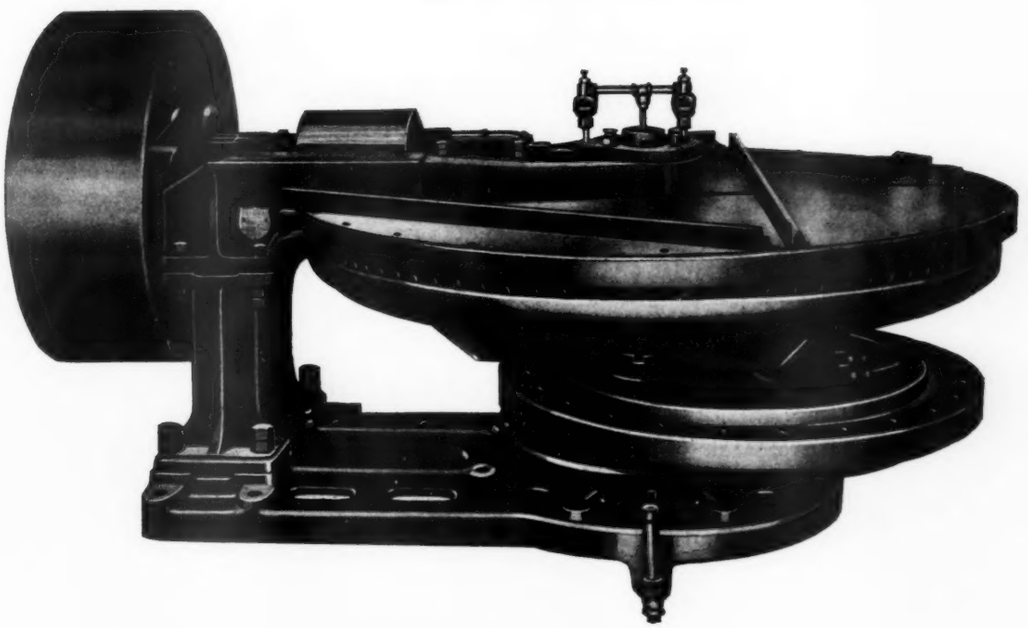

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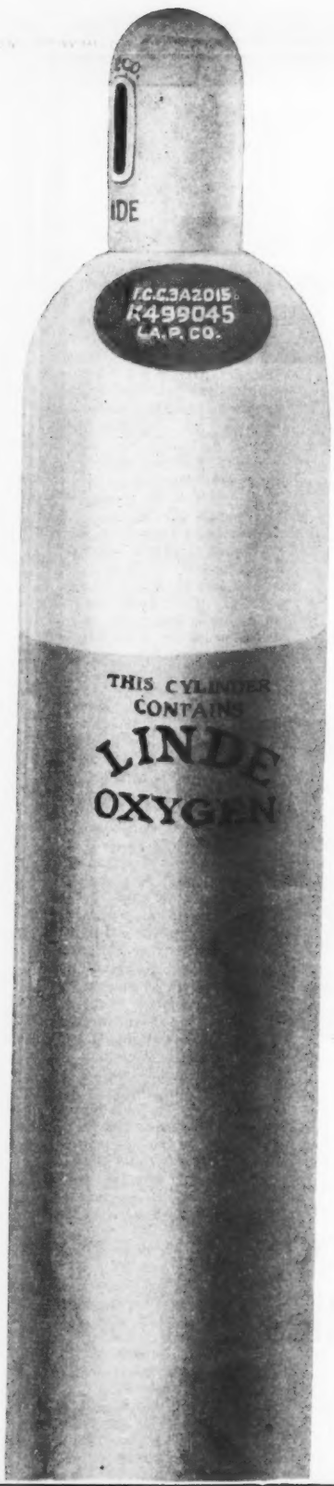

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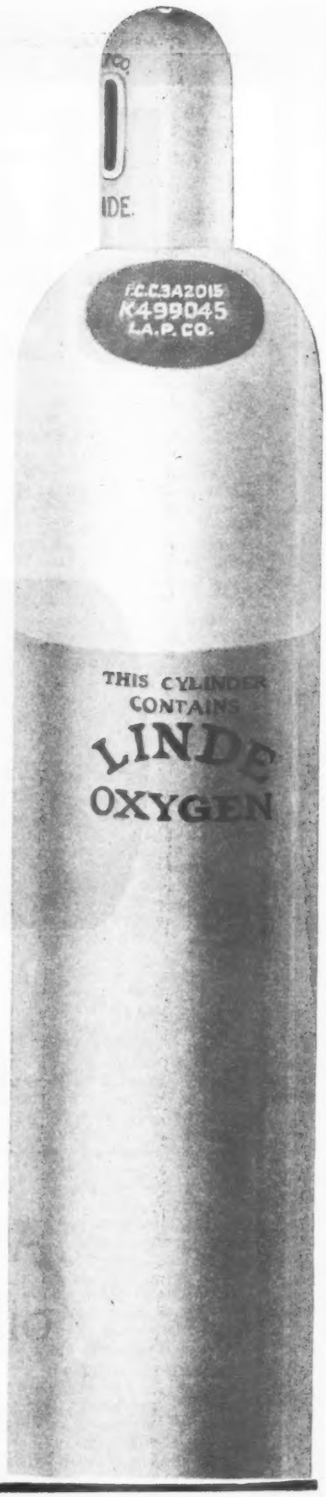

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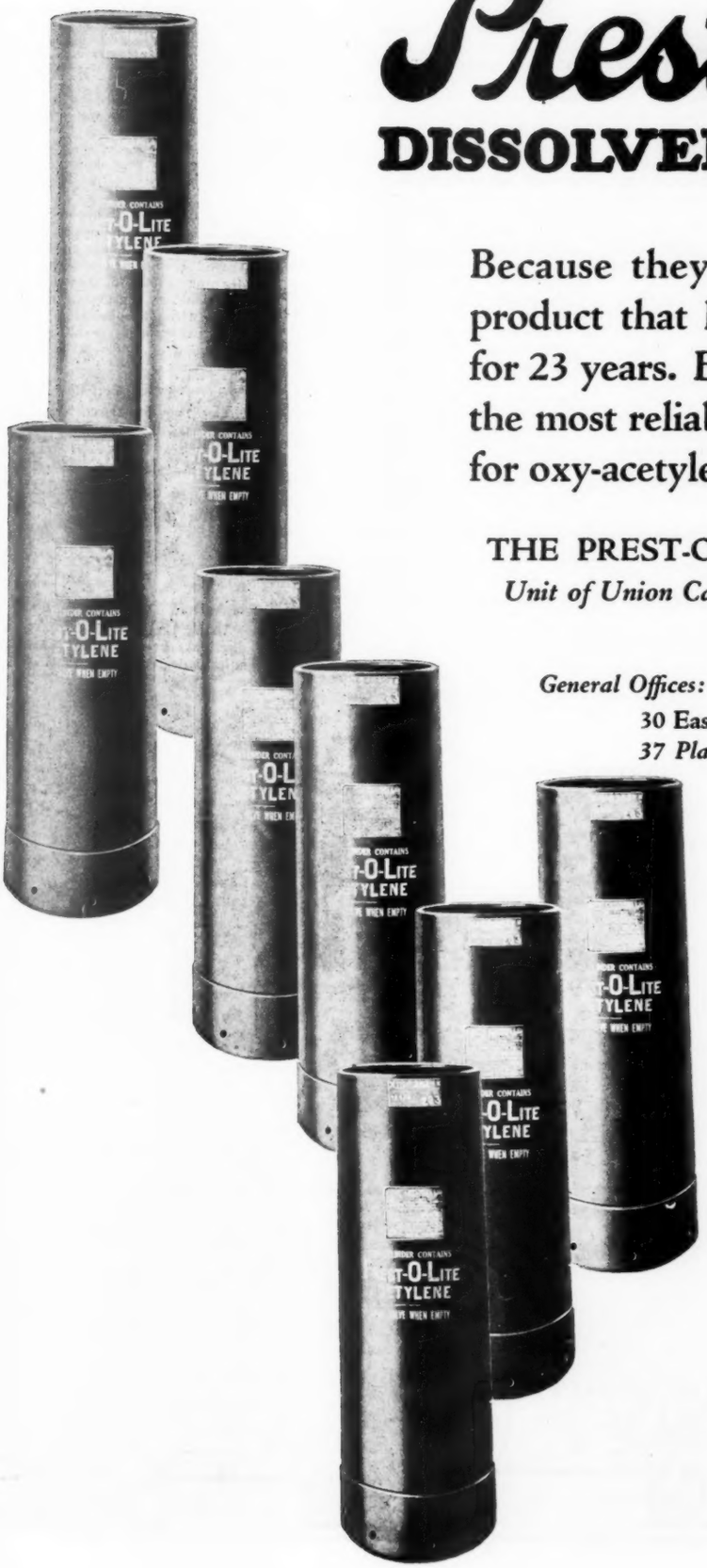

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Methods of Shutting Off Bottom Water

As Practiced at Powell and Wortham, Texas, the Results Are Beneficial. Increase in Average Production

By H. B. Hill and Chase E. Sutton
United States Bureau of Mines.

The Wortham, Tex., Field, like other fault fields, started in a comparatively short time to show water, which increased rapidly to amounts that in many cases severely taxed the pumping equipment. Due principally to the seriousness of the water conditions the Bureau of Mines undertook a detailed engineering study of this field, and considerable time was spent in collecting data with special reference to the water problem and in analyzing results that had been obtained by the different operators in cementing back the wells.

The benefits derived from bottom-hole plugging in the Powell Field suggested a plugging campaign at Wortham, which started in February, 1925, and has resulted in a worthwhile increase in the oil production and a large decrease in water production.

The data concerning the actual plugging work, together with the production figures immediately before and after repairing were obtained in practically all instances from the operator of the well.

The accepted practice of pumping all wells on a lease into one tank and estimating the individual productions has materially hindered the analysis in many records. However, as a whole the records are considered commendable and it is felt that the presentation of the detailed analysis will be an inducement to the operators to carefully record at regular intervals and preserve the individual well data so important in a study of this kind.

The method used in determining the results due to plugging was as follows:

An individual production curve was plotted for each well plugged back, based on the reported daily oil and water production on various dates. For each lease upon which a well or wells were plugged back an oil production decline curve was plotted for the average well. At the time any well was plugged it was dropped from the group representing the average well so that the average well curve indicates the decline of uncemented wells only.

By the use of an X-ray tracing device the average well curve for the lease was then superimposed on the production curve of the cemented well or wells on the lease, at the reported daily oil production figure immediately prior to the plugging of the well.

The increase or decrease in oil production due to plugging was then calculated up to the point where individual well records of the repaired well were no longer available.

For the purpose of this report a successful repair job is defined as follows: A successful job is one in which the oil production of the well repaired has been increased a sufficient amount to warrant fully the assumption that the cost of the job plus the value of the oil lost during the time the well was being repaired, at the rate being produced previous to the commencement of work, is entirely repaid. Such a definition does not take into consideration the benefit occurring from the reduction of water production, which is the result sought in most plugging work.

Determinations From Analysis

The following determinations are indicative of the substantial increase in oil production and decrease in water production resulting from the repair campaign.

The total oil gain from the successful wells is estimated at 980,390 bbls., which for the 86 wells represents an average increase per well of 11,400 bbls.

The total oil lost from the unsuccessful jobs is estimated at 102,870 bbls., or an average loss per well for the 35 wells of 2,938 bbls.

Reduced to a job basis the above increased production gives a gain of 9,337 bbls. per successful job as compared to 1,371 bbls. loss per unsuccessful job.

The figures immediately before and after repairing show that there was an increase of 5,656 bbls. in daily oil production. The total oil production before plugging was 10,044 bbls.; the same wells showing a total production after repairing of 15,700 bbls.

The total water production before plugging on the same jobs was 56,332 bbls., and after plugging, 22,773 bbls, giving a decrease of 33,500 bbls. daily.

Reduced to the average well, the above figures give a daily production of 63 bbls. oil and 358 bbls. water at the time of repairing, and 106 bbls. oil and 154 bbls. water after repairing, or a net increase of 43 bbls. oil and a decrease of 204 bbls. of water.

Considering the field totals, for every bbl. of oil lost due to plugging there was a 48-bbl. decrease in water and an 8-bbl. increase in oil production.

Comparison of Plugging Methods

Three methods are in common use for plugging off the lower part of a well. These are known as follows: Tubing with pressure, dump bailer, and lead wool or mechanical method. The first two use cement as the plugging material, the difference being primarily in the method of placing the cement and the use of pressure with the tubing process.

The lead-wool plug consists of placing from 300 to 500 pounds of lead wool in the well and tamping in place with the drilling tools. In many wells bottom-hole packers of various kinds are used in conjunction with the lead wool, as are also steel shavings and cuttings.

The results obtained by the various methods are shown in Table 2.

The results obtained, as noted in Table 2, would indicate that there was very little choice between the three methods so far as the probabilities for success were concerned. However, as the dump-bailer and lead-wool jobs represent approximately only 23 per cent of the total, the comparison is slightly in their favor.

Estimated Plugging Costs

The estimated average cost per job of repairing a well, based on figures obtained from various operators and including the value of the production lost during the time the well is shut down, follows:

Tubing with pressure	$912
Lead-wool	990
Dump-bailer	216

The total expenditure for repair work, using the above estimates of cost per job, is as follows:

Tubing with pressure	$123,120
Lead-wool	23,760
Dump-bailer	3,606

The not oil gain due to plugging, 877,520 bbls., at a value of $2 per barrel, gives $1,955,040 as the estimated increased income. Deducting the cost of plugging, $150,535, leaves an increase of $1,804,504 as the net result of the repair work, without considering the saving in operating expense resulting from the reduction of 33,500 bbls. per day of water production.

Production Cost Data

The production cost figures as furnished by five operators in the field are tabulated below:

Table 3—Production Cost Data, Wortham Field

Operator	Daily Oil, Bbls.	Daily Fluid, Bbls.	Cost per Bbl. Oil	Cost per Bbl. Fluid
A	28	591	$0.75	$0.04
B	1,536	16,000 Est.	.57	.05
C	286	2,012	.70	.10
D	1,280	17,882	.48	.01
E	46	200	.48	.11
Average			$0.596	$0.066

Effect of Decreased Water Production

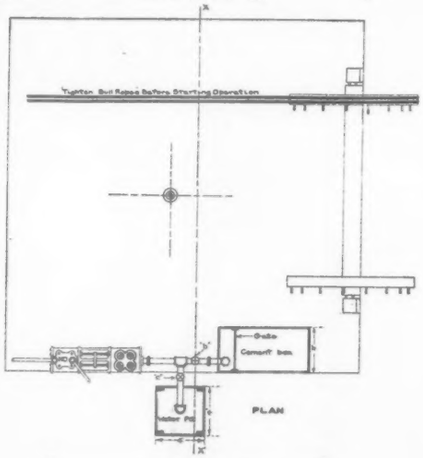
Using the figure of $0.07 as the production cost per barrel of fluid, the resultant decrease in operating expense due

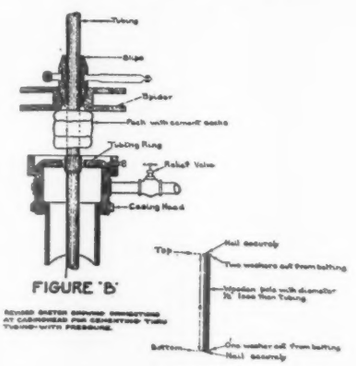
TABLE 1—PERCENTAGE OF WELLS SUCCESSFULLY PLUGGED, WORTHAM FIELD

	Successful	Unsuccessful	Indeterminate	Percentage Successful
Number of jobs	105	75	5	58
Number of wells	86	35	5	68

TABLE 2—COMPARISON OF METHODS OF BOTTOM-HOLE PLUGGING, WORTHAM FIELD

	Successful	Unsuccessful	Total	Per Cent Successful
Tubing pressure	75	60	135	55
Dump bailer	11	6	17	65
Lead wool	15	9	24	62





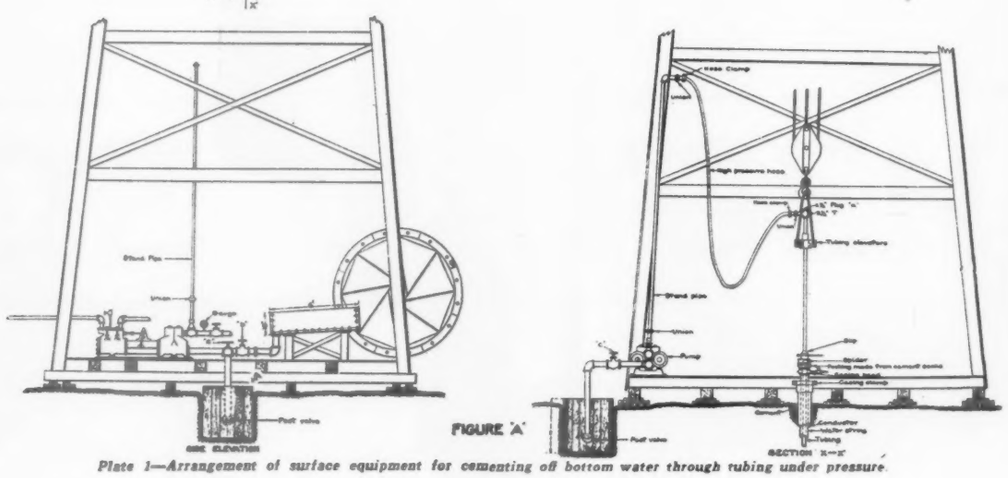


Plate 1—Arrangement of surface equipment for cementing off bottom water through tubing under pressure.

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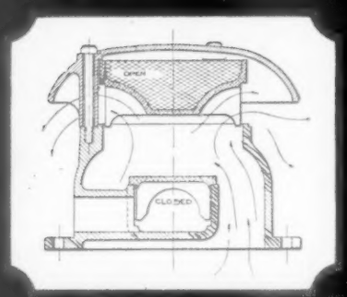
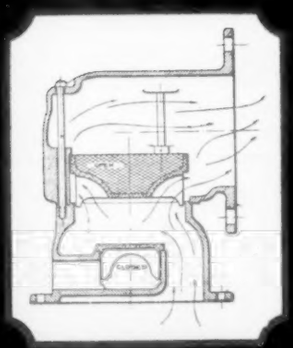
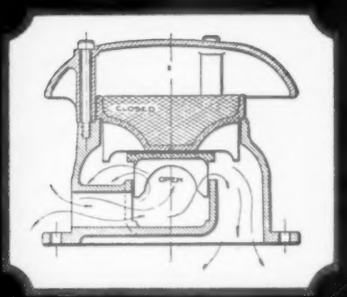


1—Action Releasing Vapors.



3—Pressure-Vacuum Gauge with the Pipe Outlet.



2—Action Relieving Vacuum.

This type gauge is for use where it is desired to carry the vapors away from the tank, either for safety, or for use as fuel.

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to reduction of water production is easily evident.

The average daily decrease in water per job was 204 bbls., which is equivalent at the above production cost to an increase in oil production of 7 bbls. per day.

As the average increase per day, over a 30-day period, required to repay the repair expense is 15 bbls., it would appear that approximately 45 per cent of the cost of plugging was recovered through a reduction of water due to the repair work

Effect of Plugging on Offset Wells

In several jobs plugging off water in one well increased the oil production of adjacent wells. For example, the daily production in No. 3 Pure-Simmons increased from 150 to 300 bbls. shortly after No. 5 Pure-Simmons was cemented, with no other change in conditions. Well No. 3 is one location north of No. 5. Also, after No. 3 Why-Not-Simmons was successfully cemented in August, 1925, the production of No. 5 Why-Not-Simmons immediately increased from 150 to 220 bbls.

Effect of Plugging on the Decline of the Average Well

Table 4 is a production record of the plugged and unplugged wells, as obtained from the individual well reports on the dates noted.

The benefit derived from plugging is evident in the rate of decline in production of the average well of the two groups. Figure 1 is a graphic interpretation of the data shown in Table 4.

The two curves of the average wells (plugged and unplugged) are centered at the 260-bbl. point, so that the sustaining effect of plugging is easily observed.

The fact that the production of the plugged wells (see eleventh monthly period) is approaching the production of the unplugged wells, suggests that the water encroachment has progressed to such an extent that the effect of the primary repair work is about ended. Such a condition would indicate that secondary plugging work should be started where the thickness of the sand warrants, if further benefit is to be derived from a reduction of water.

Summary of Results From Plugging Work

The proper time to cement a well is a question that even the many records presented do not fully determine. However, an analysis of the jobs in which 15,000 or more barrels of oil were recovered above what could have been expected without plugging, indicates that the sooner the well is plugged after the appearance of water in large amounts the better are the chances of a sizable increase.

This is what would be expected normally, for the following reasons:

(1) The gas still remaining in the reservoir would not be "killed" by continued water pressure and the decline in gas pressure would not have progressed as far as at a later period.

(2) The apex of the cone formed by the "pulling in" of the water would not be as high as at a later time, with the consequent result that less plug could be placed in the well, which would allow for better drainage of the oil trapped between the cones of adjacent wells.

(3) A material saving in production and treating costs by not having to handle large quantities of water.

The type and method of placing a plug should be governed by the particular conditions encountered in the well. No fixed rule can be set, the percentage of success using the different methods being so nearly the same that careful study of a well prior to beginning work should be the controlling factor governing the method adopted.

Sufficiently accurate records should be kept for a period before and after repairing to fully determine the effectiveness of the work. This is best done by taking actual 24-hour gauges on the well continuously, or at regular intervals of not more than 10 days apart.

Several cases can be cited where the beneficial results of repair work were not evident until some two to five weeks after completion of the job. In such cases the evidence of the success of the job is covered up unless accurate production records are kept.

The success or failure of a job should be judged, at least in part, by its effect on the water production and not altogether on whether it increased the oil production. In a majority of cases the motive for cementing is to reduce the amount of water being handled, but unfortunately after the job is completed the oil gauge is used as the indicator rather than the water production.

The bearing that the length of plug to be placed has upon the method of placing it, is not as conclusive from the records in Table 12 as could be desired.

There is, however, a rather marked decrease in percentage of success when plugs of less than 5 feet in length are attempted. There were 13 plugs of less than 5 feet in length put in, four of which proved successful, for a percentage of 31 per cent.

Of the 13 plugs, 10 were placed through tubing with pressure, two were mechanical (lead-wool), and one was a dump bailer job. Three of the tubing-pressure jobs and one of the lead-wool jobs were successful, the balance being unsatisfactory.

From a mechanical standpoint it is advisable, where a plug of less than 5 feet is desired, that either a mechanical plug or the dump-bailer method of cementing be used.

A knowledge of the subsurface conditions as well as the various steps involved in the work are of material assistance in successfully placing bottom-hole plugs. At times an attempt is made to repair a well that is unfavorably located on the structure and where a successful repair job is very doubtful. A failure in this case often condemns the process and precludes work on other wells that are located favorably on the structure.

Since the first appearance of water in the field the operators have attempted to repair the serious water wells. In a number of cases shut-offs have been obtained by the use of the dump bailer and various kinds of mechanical plugs, and through tubing under pressure.

All the repair work that was done under the supervision of the Bureau of Mines was based on a subsurface study of the field, and the tubing under pressure method of cementing was used.

Before attempting to plug the bottom of a well it is desirable to have the following data:

1. Any information relative to junk being present in the well. It is doubtful whether results can be obtained where such conditions are present, on account of the difficulty in obtaining a water-tight bond with the wall of the hole.

2 The amount of perforated pipe in a well.

3. The size and kind of perforations. The size of the perforations should be three-eighths inch holes or larger, or dollar-size slots, so that the cement can find its way outside the pipe easily. If the perforations are any smaller than indicated here, it will be necessary to pull the pipe and cement in the open hole or to perforate the pipe in place before attemping to cement.

4. The probable condition of the water string. Occasionally a leak in this string

(Continued on Page 180)

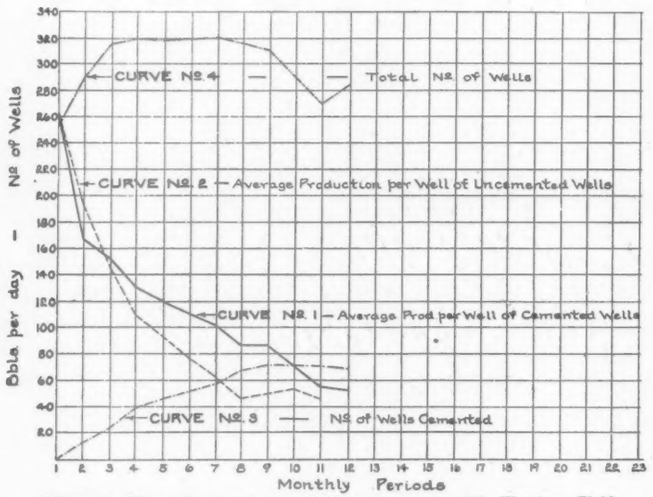
CURVE No. 4 — Total No. of Wells
CURVE No. 2 — Average Production per Well of Uncemented Wells
CURVE No. 1 — Average Prod per Well of Cemented Wells
CURVE No. 3 — No. of Wells Cemented
No. of Wells — Bbls per day
Monthly Periods

Figure 1—Effect of cementing on decline of average well, Wortham Field.

TABLE 4—PRODUCTION DATA—CEMENTED AND UNCEMENTED WELLS

Date—	Total Field Prod.	Tl. No. Prod. Wells	Wells Cemented—With Results: No. Wells	Total Daily Prod.	Av. Prod. per Well	Wells Uncemented or—No Results: No. Wells	Total Daily Prod.	Av. Prod. per Well
Feb. 20, 1925	.....	253	1	260	260	...	...	...
March 17, 1925	74.875	290	13	2.189	168	277	72.686	263
April 18, 1925	59.978	316	23	3.516	152	293	56.462	193
May 20, 1925	46.093	320	29	3.793	131	291	42.300	145
June 23, 1925	35.719	319	46	5.625	120	273	30.194	110
Aug. 17, 1925	26.219	321	57	5.921	102	264	20.254	77
Sept. 15, 1925	21.530	316	67	5.825	87	249	15.905	63
Oct. 16, 1925	17.596	311	72	6.254	87	239	11.342	47
Dec. 16, 1925	14.633	270	71	3.955	56	199	10.678	54
Jan. 27, 1926	13.400	278	69	3.676	53	209	9.724	46

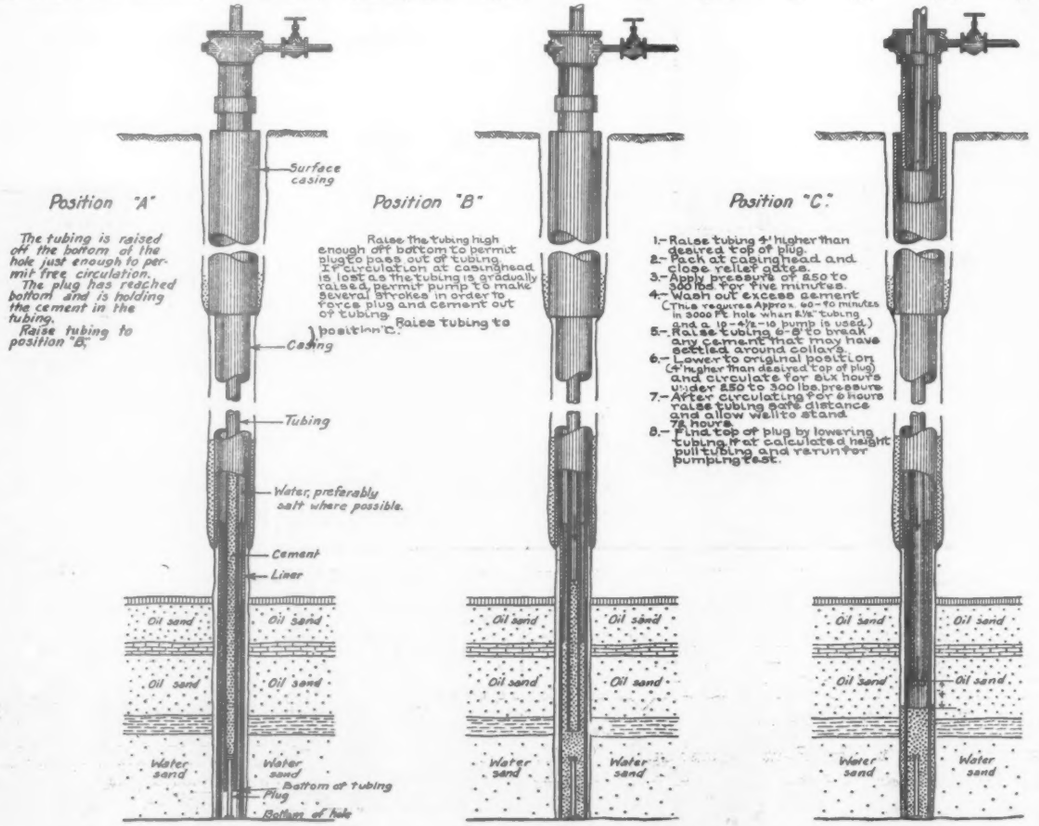
Position "A"
The tubing is raised off the bottom of the hole just enough to permit free circulation. The plug has reached bottom and is holding the cement in the tubing. Raise tubing to position "B".
Surface casing
Casing
Tubing
Water, preferably salt where possible.
Cement
Liner
Oil sand
Water sand
Bottom of tubing
Plug
Bottom of hole
Position "B"
Raise the tubing high enough off bottom to permit plug to pass out of tubing. If circulation at casinghead is lost as the tubing is gradually raised, permit pump to make several strokes in order to force plug and cement out of tubing. Raise tubing to position "C".
Position "C"
1.- Raise tubing 4' higher than desired top of plug.
2.- Pack at casinghead and close relief gates.
3.- Apply pressure of 250 to 300 lbs for five minutes.
4.- Wash out excess cement (This requires Approx. 60-70 minutes in 3000 Ft hole when 2½" tubing and a 12-6½-10 pump is used.)
5.- Raise tubing 6-8' to break any cement that may have settled around collars.
6.- Lower to original position (4' higher than desired top of plug) and circulate for six hours under 250 to 300 lbs. pressure
7.- After circulating for 6 hours raise tubing safe distance and allow well to stand 72 hours.
8.- Find top of plug by lowering tubing to calculated height pull tubing and rerun for pumping test.

Figure 1. Figure 2. Figure 3.

Plate 2—Sketch illustrating method of cementing off water through tubing with pressure.

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LANDING AND CEMENTING LONG WATER STRINGS

(Continued from Page 74)

ference of oil or gas with the setting of the cement. Where the pilot hole has been centered, but not plugged, there is a uniform width of shoulder on which to set the casing, and space is practically assured for a continuous cement column of uniform thickness around the shoe of the casing. If the pilot hole is not centered the shoulder will be on one side of the hole or at best of a variable thickness, and when the casing is landed it will be forced against the wall opposite the shoulder, resulting in forcing the cement on one side of the shoe only.

Character of Formations

After the water string is set, cores are usually taken while drilling the hole full size to determine the character of all formations within the oil zone. It is not believed to be good practice to drill a full size hole into the oil zone prior to cementing the water string. If this is done the shoulder on which to land the casing is destroyed and additional work is necessary to provide the most favorable conditions for a successful job. First, the hole must be plugged solidly, preferably with cement, but at least with a substantial bridge, up to the cementing point to provide a foundation on which to land the casing, and, second, the hole below the cementing point should be plugged with cement to afford opportunity for a definite test of the water shut-off without interference from oil and gas from below and without subjecting the oil and gas measures to damage from upper water if the job should be a failure. An attempt should never be made to cement a long string of casing suspended, with large open hole below the cementing point.

Some operators feel that a full size core hole below the cementing point of the casing, even though it is plugged solidly with cement prior to setting the water string, is not justified because subsequent drilling with a smaller bit through the cement will quickly shatter the portion not drilled out, leaving the big hole as if it had not been plugged. The objection to the big hole below the shoe is the difficulty of recovering a "fish," should a twist-off occur below the water string. It is contended that the top of the "fish" could get so far to one side in a hole drilled larger than the casing through which drilling is continuing that it would be doubtful if a fishing tool could get over and recover it, which would necessitate sidetracking. They advocate setting casing on bottom and making only a small pilot hole below the cementing point.

Advantage of Large Hole

One large company contends that the advantages of having a large hole drilled ahead of the shoe of the casing, before the casing is set, far outweigh the added hazard in case of a fishing job, and operates accordingly; while another of the large companies holds the opposite opinion. This difference of opinion is based entirely on the experiences of each company. However, the safer way is always the best, and that is to drill below the cementing point with a small hole.

Before pulling out the drill pipe for the last time, preparatory to putting in the casing, the mud fluid should be brought to a uniform consistency throughout the hole by continued circulation. It should be fluid enough not to be sluggish in the ditch and be free from sand and gas. Special care in conditioning the hole to receive a long string of casing is considered essential by the careful operator.

Special inspection of the mechanical equipment to handle the casing is a precaution against mishap also taken by careful operators. Delays for repair of parts after the casing is started into the hole should be avoided in so far as possible.

The tremendous weight to be handled, the strain on all parts of the derrick and machinery, the costly result of the failure of any part of the equipment while the load is being moved up or down in the hole are sufficient to cause the person responsible for the work to make sure that everything is in first-class order.

Special Attention

If rotary drawworks are to be used to handle the string of casing, the following are important parts to be given special attention before starting the casing into the hole:

The sprocket wheel and chains should be carefully gone over, and worn or broken parts replaced.

A good cat-line should be supplied and no chances taken with one partially worn out.

The crown block and pulleys should be examined carefully and any worn parts renewed.

The crown pulleys require special attention to make sure the casing line will not be damaged and weakened by running over them. If grooves have been cut in them the casing line will quickly wear and cut, and the danger of dropping the string of casing increases with each joint put in. The casing line should be carefully gone over for breaks or flat places, and if any are found it is well to replace the line with a new one.

The slips should be just the proper size for the casing and spider being used, and should be tied together in pairs to guard against dropping one of them into the hole.

All tongs to be used should be checked as to proper size and a supply of sharp dies kept on hand.

The mud pumps should be put in first-class condition with new packing and any other material needed.

If the casing is to be handled on the calf wheel, using the cable-tool engine and band wheel, the following are important additional items to be given special attention:

The belt should be cut, even though it may appear sufficiently tight. This will likely eliminate a delay which might otherwise become necessary at some later stage of the work.

The calf wheel brake should be in first-class condition.

An extra jerk line should be on the walk, available at once if needed, to avoid delay in sending for another jerk line should the one in use become unserviceable.

Plan of Procedure

Before starting to run a string of casing into the hole a definite plan of procedure must be formulated. This plan is made to fit all conditions in the particular well, in the particular area, and for the particular purpose for which the string is intended. The more important questions in a plan of procedure are:

1. It must be decided whether or not the casing is to be floated into position. This involves the total weight of the casing and the number of lines in the casing blocks necessary to handle this weight. Most operators rely upon judgment and experience, keeping well within the limits of safety if no float valve is to be used.

2. The exact depth of the shoe when the cementing operation is completed must be determined from cores, or by correlation of strata by a competent petroleum engineer.

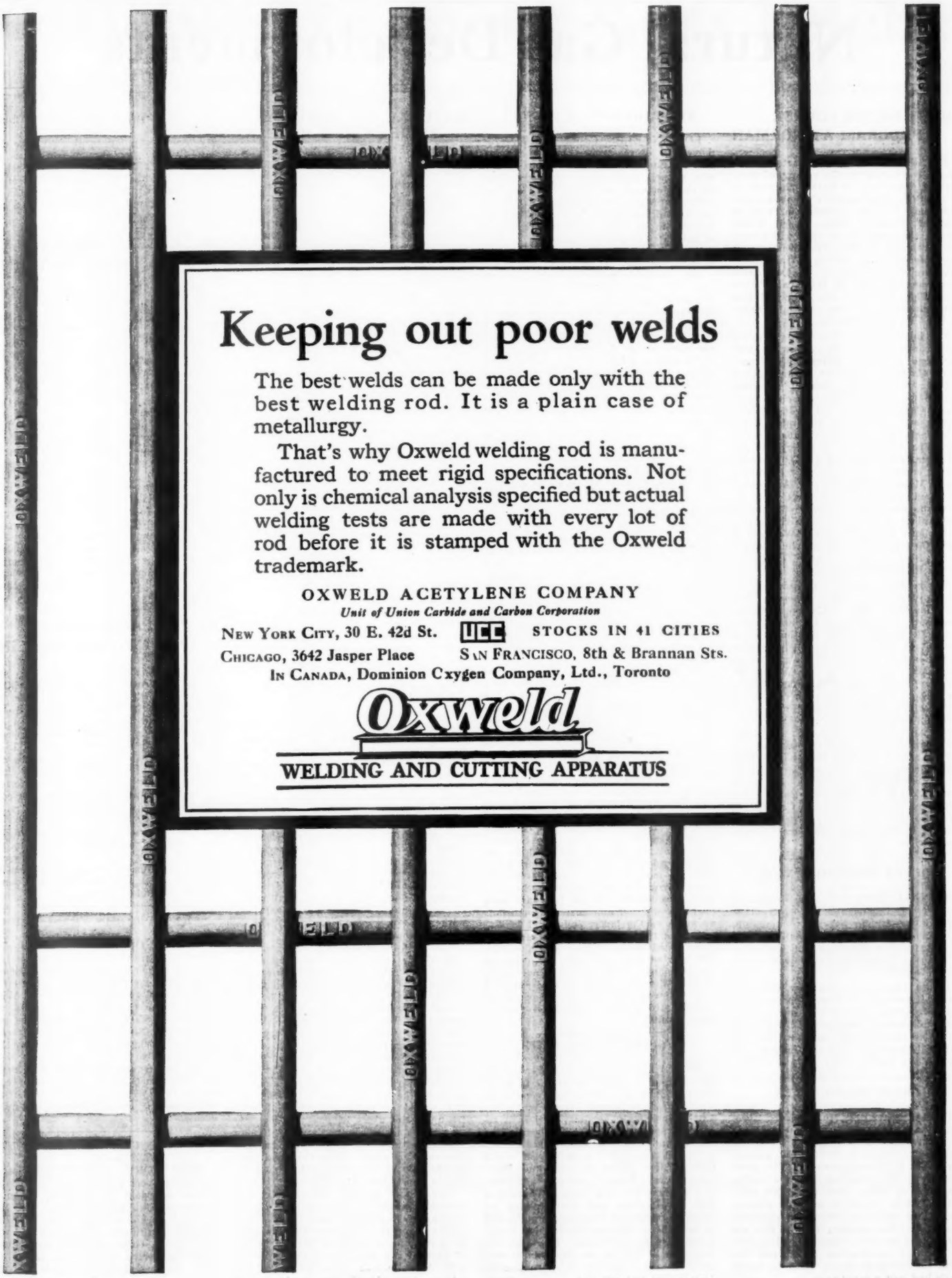
3. The manner in which the cement is to be placed in the hole and whether or not a baffle plate is to be used depend upon the depth to the cementing point and whether the "Perkins" method is to be used.

4. It must be decided whether or not the casing is to be moved so as to pass collars during the displacing of the cement. This depends upon the total weight of casing and strength of the joints. The frictional resistance to the movement of the casing must be added to its weight in deciding whether it may safely be pulled. A much heavier string of casing can be lowered and suspended on the lines than can be safely moved upward against weight and friction.

5. The position of the shoe when the cement starts out of the casing depends upon whether the casing is to be landed on a shoulder or plug, or whether it is

6. How much casing is to be run

(Continued on Page 101)



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Natural Gas Developments

SHORT METER COURSE PROGRAM AT NORMAN

The Southwestern gas meter short course conducted by the college of engineering, University of Oklahoma, assisted by the State Corporation Commission and Oklahoma Utilities Association, will be held at Norman, Okla., April 24-26. Among the papers to be read will be one on "Problems of Wet Gas Measurement and Measurement Below Atmospheric Pressure" to be read by R. D. Turner and discussed by G. P. Bunn, and "Pipe Line Flow Formulas and Flow of Gas Through Small Orifices at High Differentials" by E. L. Rawlins.

The instructors for the fifth gas meter short course will be: E. L. Rawlins, natural gas engineer, Bureau of Mines; John C. Deihl, engineer, Metric Metal Works; S. W. Case, district manager, Bristol Co.; W. S. Ralston, chief engineer, Chaplin-Fulton Co.; Joe Klein, service man, Pittsburgh Equitable Meter Manufacturing Co.; C. E. Mason, engineer, Foxboro Co.; W. D. Emery, district manager, Foxboro Co.; C. D. McLean, chief engineer, Pittsburgh Equitable Meter Manufacturing Co.; H. A. Kahler, representative, Sprague Meter Co.; E. F. Dawson, assistant professor, School of Mechanical Engineering, University of Oklahoma; F. I. Thompson, Westcott & Greis Co.; R. D. Turner, gasoline department, Skelly Oil Co., and George P. Bunn, Phillips Petroleum Co.

The general committee follows: E. A. Clark, chairman, Tulsa, Oklahoma Natural Gas Corp.; W. H. Carson, Norman, professor of mechanical engineering; John H. Baxter, Ada, Southwest Gas Co.; F. D. Frank, Bartlesville, the Empire Companies; Eugene Metz, Kansas City, Mo., American Meter Co.; B. P. Stockwell, Bristow, Oklahoma Utilities Co.; E. F. McKay, Oklahoma Utilities Association; D. C. Williams, Ponca City, Marland Refining Co.; C. B. Day, Oklahoma Natural Gas Corp.; C. M. Cone, gas engineer, Oklahoma Corporation Commission; F. W. Wright, Dallas, Tex., general superintendent, Dallas Gas Co.; A. J. Kerr, Tulsa, Pittsburgh Equitable Meter Co.; C. W. Robbins, Ponca City, Oklahoma Northern Utilities Co.; D. A. Sillers, Dallas, Tex., Lone Star Gas Co., and W. L. Crittenden, Oklahoma Utilities Association.

TOPEKA FRANCHISE VOTE

TOPEKA, Kans., Apr. 21.—Making its first recorded move for the sanction of the Kansas Public Service Commission, the Industrial Gas Co. has applied for a certificate of convenience and authority to transact the business of a public utility at Topeka.

In its application, the new company stated it intended to engage in the business of selling and distributing natural gas for industrial purposes at Topeka. A franchise granted the company by the city will be subject to a referendum at a special city election May 8.

GREAT FALLS RATES

GREAT FALLS, Mont., Apr 21.—There will be no change in the schedule of natural gas rates proposed for Great Falls by the Great Falls Gas Co., according to A. H. Sikes, manager. The rates call for a maximum of 75 cents and a minimum of 32½ cents per 1,000 feet, with a $1.50 minimum monthly charge. Mr. Sikes said the rates as proposed would give his company only a fair return on its capital investment. He pointed out that construction of the gas line from the Kevin-Sunburst Field to Great Falls had cost a large sum.

TWO-PART RATE APPROVED

LOS ANGELES, Calif., Apr. 21.—Indorsement of the proposed two-part gas rate for Santa Barbara was given by the city council and the board of directors of the Chamber of Commerce. The indorsement was given to Joseph M. Berkeley, consulting gas engineer employed by the city in its contention for a reduction of gas rates and the substitution of natural gas for the mixed gas now being supplied to the city.

Mr. Berkeley recommended the two-part rate and the officials of the Southern Counties Gas Co. have agreed to it. He recommended the fixing of a service charge of $1 to each consumer and the company contends for $1.50. Both he and the gas company had agreed upon a rate of 75 cents per 1,000 for natural gas, the closing of the present mixing plant and the substitution of natural gas for artificial gas. Both have agreed that the company's plant will be amortised over a period of 10 years as there will be no further use for it when natural gas is substituted.

EQUITABLE GAS CO. REPORT FOR PAST YEAR

PITTSBURGH, Pa., Apr. 21.—Gross operating revenue of Equitable Gas Co. and affiliated gas companies for the year 1927 was $13,248,237.27, a decrease of $1,595,139.96, or 10.7 per cent, compared with 1926. The gas output was adversely affected by warm weather during expected cold weather periods and by the business depression prevailing generally throughout the territory, which was particularly marked in such large gas-using industries as glass and pottery manufacturing.

In order to provide additional supplies of natural gas, arrangements have been completed with affiliated interests for the delivery of gas from fields in Kentucky and West Virginia. These augmented supplies will enable the company to meet all present demands for service and will provide a sufficient margin on which to build up new and greater markets. Other gas purchase contracts into which the company entered several years ago for the protection of its customers expire shortly.

A favorable outlook for the company comes through prospective new business now being energetically solicited by the reorganized sales department. During the past 12 months more than 500,000,000 feet of new load was added to the lines of a type which will not fluctuate with changing weather and business conditions as much as the larger industrial loads.

During the year, 3,160 new customers were added to the system and about 2,900 new service lines laid. Employes of the company are studying out new ways of extending the use of natural gas, and it is believed that this co-operation and intelligently directed effort will produce good results.

ARKANSAS GAS LINE

SHREVEPORT, La., Apr. 21.—Construction of a minimum of 40 miles of 10 to 16-inch line north from connection with Arkansas Natural Gas Co. Caddo-Little Rock main, contemplated in a recently approved $13,000,000 bond issue will be undertaken to supply fuel to lime kilns and cement mill to be built at White Cliffs, Little River County, and Saratoga, Howard County, Arkansas. In addition to these two new large consumers of fuel, two others are contemplated by Shreveport lumber interests; a pulp mill to be built in Webster Parish and a salt works in Bienville Parish. The total consumption of gas by the four plants will amount to a minimum of approximately 100,000,000 feet per day.

NATURAL GAS SURVEY MADE IN NEW ORLEANS

NEW ORLEANS, La., Apr. 21.—Further steps to bring natural gas to New Orleans for domestic and industrial consumption will be taken by the Commission Council following the presentation of the report made by Forstall, Robison & Luqueer, New York City, stating that natural gas is available in sufficient quantities to supply the demand, which it is expected will arise out of the successful completion of negotiations. The engineers' report indicated that the plan should be amended to include the supplying of natural gas to domestic consumers. One plan, previously announced, held that natural fuel would be furnished only to industrial concerns.

The new work to be undertaken by the commission will be in the form of negotiations with about 15 firms which have advanced plans to bring natural gas into this city for distribution. The principal points brought out in the engineers' report are briefly summarized in the following:

That natural gas in suitable quantity is available in the Monroe-Richland fields with the life of the present supply estimated as sufficient for 18 years. This capacity is based on a daily estimated consumption of 600,000,000 feet. The field may be extended by new developments, the report pointed out.

The distance over which the supply line will have to be constructed eliminates the possibility of gas at a material saving over oil or coal in industrial use which means the market will be on a competitive basis depending upon the price of fuel oil, and other fuels. The total fuel capacity of industries here was placed at 23,819,000 M. feet yearly, it being indicated that the amount sold would be considerably less than this volume.

A survey of the gas department of New Orleans Public Service, Inc., distributors of artificial gas, showed that the manufacturing costs were approximately one-third the total, the remaining two-thirds being fixed charges. The costs per 1,000 feet of the distributing company for 1927, based on a distribution of 40,000 feet per customer, were: Transmission and distribution expense, $0.108; consumers' expenses, $0.071; commercial expenses, $0.16; general and miscellaneous expenses, $0.079; taxes, $0.152; reserve, renewals and replacements, $0.088; return upon base rate (7.26 per cent), $0.348; total, $0.802. The domestic rate to small quantity consumers is $1.40 per 1,000 feet, with a discount of 1 cent per 1,000 on prompt payment.

The high peak demand on extremely cold winter days, leaves large quantities of gas for sale to industrial consumers willing to contract with a provision that on peak days the gas would not be furnished. The report stated that a ready market had been found in other cities on this basis. Gas could also be furnished New Orleans Public Service power house and the Sewerage and Water Board Central Station at "dump" prices.

"The distribution of natural gas as proposed by the New Orleans Public Service, Inc., would not confer any material benefit upon the users of gas for domestic purposes, and such advantages as it may offer for industrial users could be substantially obtained under the conditions of the sale of natural gas for both domestic and industrial purposes."

The report further recommends that natural gas being a quality product should be supplied to domestic users first.

The proposal of the New Orleans Public Service for a supply of 35,000,000 feet of natural gas daily would be ample for both domestic and industrial use if the mixing with 11,000,000 to 15,000,000 feet of artificial gas is acceptable to industrial users on peak load days.

The delivery of natural gas at the city gate in the quantities outlined may be effected at 25.5 cents per 1,000 feet in 1929 and 22.4 cents per 1,000 feet in 1932. Amortization of the pipe line in 10 years is figured with interest at 8 per cent.

MUSKOGEE COMPANIES ASK GAS FRANCHISE

OKLAHOMA CITY, Okla., Apr. 21.—The Municipal Gas Co. of Muskogee and the Muskogee Natural Gas Co. have been granted certificates of convenience and necessity, authorizing them to apply to the city of Muskogee for an election whether they should be granted a franchise. The Municipal company asks to serve industrial and domestic users, the Muskogee Natural to supply industrial concerns only.

The Oklahoma Natural Gas Co., which took over the Muskogee properties of the Oklahoma Gas & Electric Co. last March, protests the granting of the certificates. Attorneys for the company declared that it held a revocable permit, that it was supplying the city efficiently, that it had enough gas in reserve to meet all future demands and that there was no necessity for other companies in Muskogee.

The two applications were combined for a hearing. Testimony was taken by the commission at Muskogee March 21 and 22, and at the capitol here March 29 and 30.

EL PASO ASKS SURVEY FOR NATURAL GAS LINE

EL PASO, Tex., Apr. 21.—The sale of the El Paso Gas Co. to Union Utilities of New York was announced here by Manager K. L. Simons. He had no information as to the consideration involved. The gas company was purchased from the Southwestern Power & Light Co., which owns several electric, gas and water companies in Texas. Union Utilities is reported to be a company formed by eastern financiers to buy up gas companies in many parts of the country.

The City Council has voted $5,000 for the employment of Quinton, Code & Hill, Los Angeles consulting engineers, to make a survey of the possibilities of bringing natural gas to El Paso from Artesia, N. Mex., or the Winkler County, Texas, oil fields.

KNORPP GETS FRANCHISE

KANSAS CITY, Mo., Apr. 21.—The voters of Kansas City, Kans., have ratified the action of the city commissioners in granting the John L. Knorpp interests an industrial gas franchise. M. L. Alden, attorney for the Knorpp interests, announced a $50,000 bond would be provided within 30 days with a view to commencing work at once. They have 120 days in which to post this bond.

The new franchise specifies the Knorpp interests must supply distributing companies for 25 cents per 1,000 feet at the city gates, if the city commissioners so decide.

LASKEY CHOSEN PRESIDENT

NEW YORK, Apr. 21.—Charles G. Laskey, pioneer gas well prospector, was elected president of the newly organized Southwest Gas Utilities Corp. Mr. Laskey helped to lay the first pipe line through northwestern Louisiana and with his partner, George Belchic, participated in the discovery of the Pine Island and Bull Bayou producing fields of that section.

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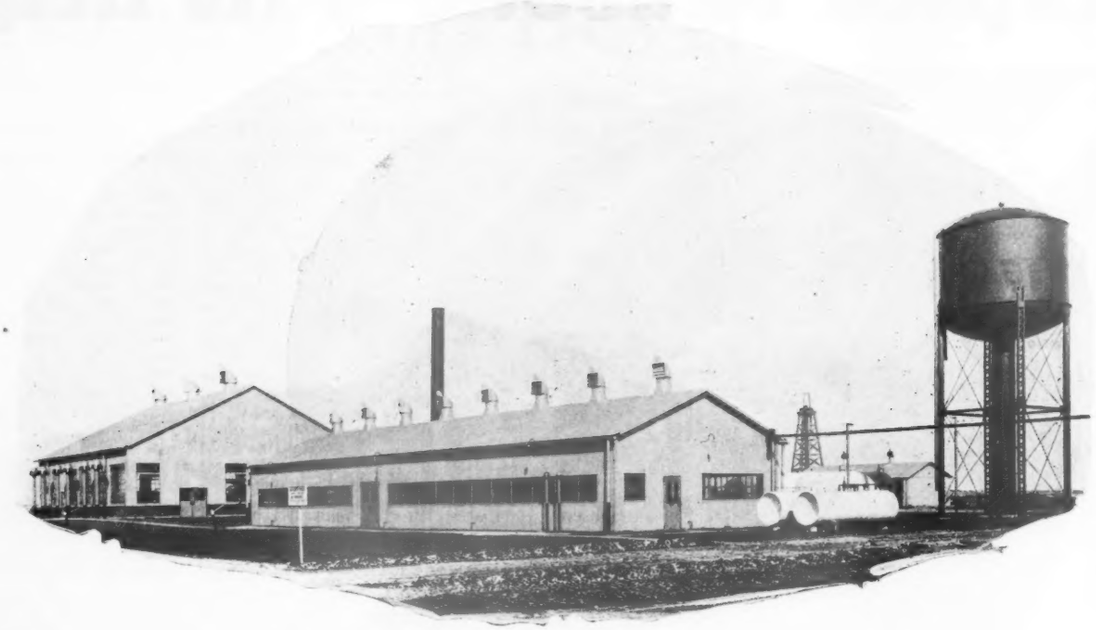

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LANDING AND CEMENTING LONG WATER STRINGS

(Continued from Page 96)

to be suspended because of large hole below the cementing point.

in before putting on the connections and establishing circulation depends upon how thoroughly the well was conditioned to receive the casing.

Where long strings of casing are to be put into a well, float valves or float collars are used to take up any desired portion of the weight of the casing which otherwise would part, due to its own weight. Such float valves are now considered necessary equipment in all fields where heavy strings of casing are used. Several types of float valves are on the market.

Handling Casing

The careful handling of the casing should not be overlooked as a necessary feature in connection with the mechanical success of an oil well. Casing subjected to rough handling before or after delivery at the well where it is to be used may be more or less severely damaged by denting while loading or unloading trucks. Dents cause a weakening of the collapsing strength of the casing as well as reducing the diameter of the working space within the pipe. If such a dent is at the end of a joint the end may be slightly out of round, sometimes spoken of as flattened, resulting in a weak joint. The threads, if exposed, are frequently injured by bumping against other metal, and the strength of the joint thereby decreased. In making up a string of casing in the derricks, all defective joints should be discarded.

Float Valves

When the casing is floated in, it is generally equipped with one float valve, frequently two, not only for the purpose of carrying a portion of the weight of the casing, which relieves strain on the couplings, derrick and other equipment, but also is added safety against irreparable damage in case the pipe is accidentally dropped. These valves prevent the entry of fluid into the casing from the bottom. The valves fit between the ends of the joints at couplings. If one valve only is used, it is placed either in the first coupling or the second coupling above the shoe; if two are used, they are placed in the first and second couplings. As the casing is lowered into the hole, fluid must be put into the casing from the top. The amount of fluid to be put into the casing depends upon its size and collapsing strength. At no time is the fluid level allowed to drop below the point at which the casing might collapse when submerged in fluid. With 11-inch 60-pound casing the fluid is kept within about 1,500 feet of the surface, while with 8⅝-inch it is carried about 2,000 feet from the surface. Fluid will pass from the inside of the casing out through the float valve at the bottom when the internal pressure becomes greater than the external pressure. The float valves, when used, function also as baffle plates, described below.

Baffle Plates

The baffle plate is a barrier placed in the first or second coupling above the shoe for the purpose of stopping the plugs used in connection with the "Perkins" method of cementing. Its use eliminates the need of a spreader to show when the two plugs have come together. These plates have holes through which the fluid and cement pass freely. They do not carry any of the weight of the casing. When the cementing job is completed and the well is being prepared for test, the baffle plates, or float valves if used, are easily broken out with the tools.

Running in Casing

The casing may be set through the rotary table or the table may be removed and the casing spider supported on timbers set for that purpose. The latter is much to be preferred, although it may require a little more time and trouble to prepare for running casing and later to prepare to continue drilling. In addition to being somewhat in the way while hanging casing set through it, the rotary table is in some danger of being damaged while running casing through it.

One of the most important details in making up and running in a string of casing is keeping an accurate count of the number of joints and the measurement of each after it is screwed into the collar. Unless the exact length of each joint after being made up, is obtained, the position of the shoe, when the string of casing is in the hole, can be only approximated. Small size casing is made up into stands in the derrick. These stands are then accurately measured as they are run in. Casing manufactured in 30 to 40-foot joints, which is coming into use, makes the setting of stands in the derrick impractical, as there is not sufficient economy of time in doing so.

The exact length of the string of casing when set up should check with drill pipe measurements. The factor of stretch (elongation) should be applied to the measured length of casing when the shoe is to be set within a limited range of depth. Sometimes water strings are made up of two or more different weight casings of the same outside diameter. In such instances the length of each portion of different weight must be recorded in order to accurately calculate the internal volume of the casing which is the volume of fluid to be used subsequently for the displacement of the cement.

In making up each joint of casing the threads must mesh and be tightened properly before the two ends of the casing touch (shoulder) inside the coupling. Cross threading materially weakens a joint and it should not be run into the hole. Joints which do not tighten properly are apt to have the ends of the casing belled, and it is dangerous to subsequently run tools through such a joint. It is largely a matter of experience on the part of the operator in being able to judge when a joint is sufficiently tight and properly made up.

When the full string of casing has been made up and all in the hole but one joint, the circulation head is put on and circulation established. The full weight of the casing now hangs on the lines or slips. When the circulation is free and uniform and the pump pressure fairly constant the casing is slowly lowered until the shoe is at the cementing depth. If it has been decided that the casing can not be pulled back safely, it should not be lowered deeper than where the shoe is to be cemented. If it can be pulled back, it is frequently run from 4 to 6 feet below the point of cementing and pulled back into position at the end of the cementing operation. This of course is under the condition that full size hole has been drilled below the cementing point.

Centering the shoe of the casing in the hole, to insure a continuous wall of cement around the casing at the shoe, is advocated by some operators. It is accomplished by placing suitable guides or wooden ring bands on the outside of the bottom two or three joints of the casing. This practice is not generally followed, but has been used in several instances with success.

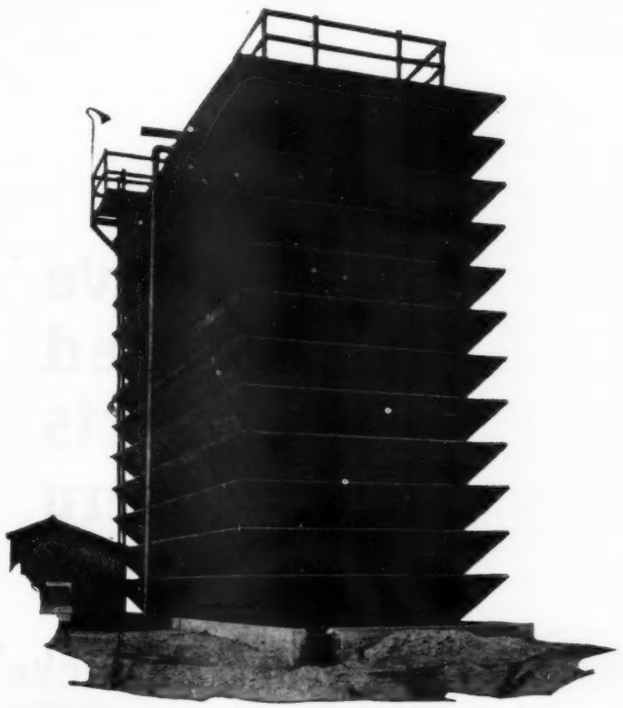
Number of Lines to Handle Casing

The number of lines to use in handling a string of casing safely depends upon its total weight and the amount of friction on it. The more lines used, the slower the casing blocks will travel. A general average for safety is six lines for less than 3,000 feet of casing weighing up to 50 tons and eight lines for more than 3,000 feet weighing from 50 to possibly 80 tons. More lines are used for excessive weight. Nine lines were used at Standard Oil Co. of California well No. 16 San Gabriel to handle 4,724 feet of 60-pound 11-inch casing, which weighed approximately 142 tons.

The length of time necessary to put in a string of casing after everything is in readiness depends upon the amount, total weight and size of casing to be put in, the number of casing lines necessary to handle it, and the number of men on the job.

The following table, made from data furnished by several companies, gives

(Continued on Page 112)



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Photograph shows Tret-O-LitE on hand at Magnolia's Sullivan No. 3, Earlsboro, Oklahoma.

Tret-O-LitE

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 44)

Edwards et als' No. 1 E. J. Case, NE cor. Sec. 182, Blk. B-3, H.&G.N. Sur. ... 70,000,000 ft. gas, 2,512-2,630 ft; top G.W., 3,034 ft; 2,000 ft. oil in hole; junked hole, 3,232 ft. and S.D.

Empire G. & F. Co.'s No. 1 S. A. Cobb, NW cor. NE, Sec. 64, Blk. 25, H.&G.N. Sur. ... Show oil, 2,510 and 2,637 ft; S.D., 3,137 ft.

Empire G. & F. Co.'s No. 1 T. Cobb-"B," C NW, Sec. 178, Blk. 3, I.&G.N. Sur. ... 22,000,000 ft. gas, 2,455-2,633 ft; drlg. ahead.

Empire G. & F. Co.'s No. 1 A. J. Dauer, NW SE SE, Sec. 236, Blk. B-2, H.&G.N. Sur. ... Set 12-in., 1,055 ft; drlg., 2,645 ft.

Empire G. & F. Co.'s No. 1 Holmes, C NE, Sec. 179, Blk. 3, I.&G.N. Sur. ... Drlg., 280 ft.

Eslick et als' No. 1 Mrs J. A. Hopkins, NW cor. W 80 acres of SW¼, Sec. 84 H.&T.C. Sur., Blk. B-2 ... Set 8-in., 2,208 ft; 6,000,000 ft. gas, 2,654-2,795 ft; cased off; show oil, 3,042-45 ft; 2,000,000 ft. gas, 3,050 ft; drlg. blue shale and G.W., 3,062 ft.

Gibson Oil Corp.'s No. 2 J. B. Bowers, NE cor. Sec. 92, Blk. B-2, H.&G.W. Sur. ... Fish. for 5-in. csg., 2,733 ft.

Gibson Oil Co.'s No. 1 G. Pierce, SE cor. Sec. 149, Blk. B-2, H.&G.N. Sur. ... Rig.

Gulf Prod. Co.'s No. 4 J. B. Bowers, SE SW SW, Gulf lease in Sec. 89, Blk. B-2 ... G.W., 3,107 ft; swbd. 95 bbls.; to pump.

Gulf Prod. Co.'s No. 5 J. B. Bowers, SW SE SW, Gulf lease in Sec. 89, Blk. B-2 ... 1,600 ft. oil, G.W., 3,190-3,225 ft; to pump.

Gulf Prod. Co.'s No. 1 M. Davidson-A, 330 ft. from S and E lines of NW cor. E half NW, Sec. 87, Blk. B-2, H.&G.N. Sur. ... C.O., 3,060 ft.

Gurnsey Oil Co.'s No. 2 B. E. McKinney, Sec. 163, Blk. 3, I.&G.N. Sur. ... Show oil, 3,025-30 ft; shot with 60 qts., 3,257-3,303 ft; C.O.

Hardendorf Drlg. Co.'s No. 1 G. A. Henderson, NE E half NE, Sec. 47, Blk. 25, H.&G.N. Sur. ... Run. 10-in. csg., 590 ft; S.D.

Hickory O. & G. Co.'s No. 1 Lester, SE cor. NW NW, Sec. 1, Blk. 1, A.C.H.&B. Sur. ... U.R. 8-in. csg., 1,760 ft.

Lefors Pet. Co.'s No. 2 J. M. Shaw, NW cor. T. Leach Sur. ... Cmt. 8¼-in. csg., 1,871 ft.

McElroy Oil Co.'s No. 1 M. B. Davis, NE cor. S 240 acres of E half, Sec. 12, Blk. 1, A.C.H.&B. Sur. ... Drlg., 1,700 ft.

Majestic Oil Co.'s No. 6 J. B. Bowers, Sec. 89, Blk. 2-B ... S.O., 3,700 ft; show wtr., 3,450-55 ft; drlg., 3,985 ft; hole full wtr.

Magnolia Pet. Co.'s No. 1 J. Bowers ... Made 100 bbls. daily from G.W., 2,853-55 ft.; swbd. 206 bbls. last 24 hrs; T.D., 3,040 ft; to d.d.

Magnolia Pet. Co.'s No. 2 J. B. Bowers, Sec. 63, Blk. B-2, H.&G.N. Sur. ... Location.

Magnolia Pet. Co.'s No. 1 E. R. Eakins, SW cor. NW, Sec. 56, Blk. 25, H.&G.N. Sur. ... Location.

Magnolia Pet. Co.'s No. 1 W. Harrah, NW cor. NW, Sec. 150, Blk. 3, H.&G.N. Sur. ... Spudded.

Operators Oil Co.'s No. 3 W. Jackson, NE NW N half NE, Sec. 88, Blk. B-2, H.&G.N. Sur. ... Location.

Osborn et als' No. 1 E. E. Barrett, SE cor. NE, Sec. 111, Blk. 3, I.&G.N. Sur. ... Fish., 2,220 ft.

Osborne et als' No. 1 J. S. Morse, SW cor. SE, Sec. 1, Blk. 26, H.&G.N. Sur. ... Rig.

Parker et als' No. 1 Mrs. M. Parker, 990 ft. S and W NE cor. S 360 acres, Sec. 9, E. N. Lynch Sur. ... Cellar.

Parker et als' No. 2 Mrs. M. Parker, 2,310 ft. from N line, 990 ft. from E line of S 360 acres, Sec. 9, N. Lynch Sur. ... Cellar.

Partan et als' No. 1 J. S. Morse, NW cor. N half NE, Sec. 5, Blk. 26, H.&G.N. Sur. ... Location.

Pampa Oil Co.'s No. 1 W. R. Campbell, Sec. 90, Blk. 3 ... 700 ft. wtr., 3,430 ft; S.D., 3,422 ft.

Phillips Pet. Co.'s No. 2 Davidson (Myson) NE cor. NW NW, Sec. 87, Blk. B-2, H.&G.N. Sur. ... Cmt. 8-in., 2,943 ft; 1,000 ft. oil from G.W., 3,060-71 ft; T.D., 3,074 ft; to pump.

Phillips Pet. Co.'s No. 3 Jackson-Riley, Sec. 88, Blk. B-2, H.&G.N. Sur. ... Recmntd. 12½-in., 1,027 ft; 6,000,000 ft. gas, 2,580-2,635 ft; cmt. 8¼-in. csg., 2,857 ft; 300 ft. oil, 3,184 ft; drlg., 3,215 ft.

Phillips Pet. Co.'s No. 4 Jackson-Riley, SE cor. W half SW, Sec. 88, Blk. B-2 ... Drlg., 1,990 ft.

Phillips Pet. Co.'s No. 1 C. Reiger-Davidson, NW cor. Sec. 87, Blk. B-2, H.&G.N. Sur. ... Drlg., 1,620 ft.

Plains Drlg. Co. and Ray's No. 1 C. Chapman, SE cor. SW NW, Sec. 50, Blk. A-9, H.&G.N. Sur. ... Drlg., 2,631 ft.

Plains Drlg. Co.'s No. 1-B Chapman, NE cor. E half NE, Sec. 20, Blk. 1, A.C.H.&B. Sur. ... Drlg., 1,900 ft.

Plains Drlg. Co.'s No. 1-C Chapman, 990 ft. N and 330 ft. W SE. Sec. 24, J. Davidson Sur. ... Drlg., 2,120 ft.

Prairie O. & G. Co.'s No. 1 W. Harrah, NE cor. N 80 acres, E 240 acres, Sec. 163, Blk. 3, H.&G.N. Sur. ... Rig.

Purple Sage Oil Co.'s No. 2 E. B. Johnson ... 2,000,000 ft. gas; 200 ft. oil; T.D., 2,841 ft.

Ray & Massie's No. 2 A. Chapman, SE cor. SW, Sec. 51, Blk. 25 ... Drlg., 2,000 ft.

L. R. Travis' No. 1 J. S. Morse, NE cor. N half SW, Sec. 3, Blk. 26, H.&G.N. Sur. ... Bldg. rig.

Travis et als' No. 1 Chapman, SW cor. SW, Sec. 10, Blk. 26, H.&G.N. Sur. ... Location.

Scott & Travis' No. 1 A. Chapman, 990 ft. N and W of SE cor. N half SW, Sec. 70, Blk. 25, H.&G.N. Sur. ... Cmtd. 8-in., 2,107 ft.

St. Clair Oil Co.'s No. 1 C. H. Rowe ... Spudded and S.D.

St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor. Sec. 35, W. R. Lee Sur. ... Spudded and S.D.

Shamrock Oil Co.'s No. 1 Chapman, NE E half SW, Sec. 50, Blk. 25 ... 10,000,000 ft. gas, 2,695-2,715 ft; show oil, 2,763-73 ft; 1 baller wtr. and little oil per hr; T.D., 3,140 ft; P.B., 2,800 ft.

Shamrock Oil Co.'s No. 2 A. Chapman, NW cor. NE, Sec. 50, Blk. 25, H.&G.N. Sur. ... Drlg., 1,100 ft.

Skelly Oil Co.'s No. 1 Bradford, NE cor. Sec. 118, Blk. B-2, H.&G.N. Sur. ... 12,000,000 ft. gas, 2,765 ft; swbd. 38 bbls. 12 hrs., 2,944-90 ft; show oil, 3,222-27 ft; show wtr., 3,325 ft; to P.B.

Spartan Oil Co.'s No. 1 J. Hopkins ... Run, 8-in., 2,240 ft.

Sullivan et als' No. 1 A. Chapman-A ... 23,000,000 ft. gas, 2,280-2,300 ft; S.O., 2,345 ft; T.D., 3,014 ft; S.L.M.; 17,000,000 ft. gas.

Sullivan et als' No. 1 S. A. Cobb, NE cor. NW, Sec. 64, Blk. 25, H.&G.N. Sur. ... Drlg., 2,515 ft; show oil.

Sullivan Oil Co. et als' No. 1 M. Huselby, NW cor. E half NW, Sec. 55, Blk. 25, H.&G.N. Sur. ... Location.

Sun Oil Co.'s No. 1 Jackson ... Top lime, 2,035 ft; 1,300 ft. oil, 3,135-45 ft; swbd. 120 bbls., 24 hrs.

Staggers Oil Co.'s (was Ruby Oil Co.'s) No. 1 B. F. Tally ... T.D., 635 ft; S.D.

The Texas Co.'s No. 3 J. B. Bowers ... Fish., 2,765 ft; 44,000,000 ft gas.

The Texas Co.'s No. 1 M. B. Davis, SE cor. NE, Sec. 8, Blk. 1, A.C.H.&B. Sur. ... Spray., 40 bbls. daily from 2,715-19 ft; drlg. ahead.

The Texas Co.'s No. 1 C. Thut, C N half of E 320 A. Sec. 1, H.&G.N. Sur. ... 10,000,000 ft. gas, 2,436-40 ft; making 1 baller 42 grav. oil per hr., 2,806-15 ft; 1,000 ft. salt wtr., 4,355-67 ft; T.D., 4,369 ft; P.B. to 2,875 ft.

The Texas Co.'s No. 2 C. Thut, SE NW SE, Sec. 1, H.&G.N. Sur. ... Drlg., 460 ft.

The Texas Co.'s No. 1 J. E. Williams, NW cor. NE NW, Sec. 7, Blk. 1, A.C.H.&B. Sur. ... Cmt. 8-in., 1,837 ft; drlg., 2,520 ft., 9,000,000 ft. gas.

The Texas Co.'s No. 2 Williams, C NW, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Drlg., 416 ft.

Tobias Oil Corp.'s No. 1 W. H. Taylor, C NE, Sec. 10, Blk. B-2, (formerly Smallwood et als') ... T.S., 765 ft; drlg., 2,490 ft.

HALE COUNTY

Bailey & Young's No. 1 Thomas, Sec. 1, Blk. J.K.L. ... S.D., 175 ft.

Donnell Pet. Co.'s No. 2 Mullican, NW cor. Sec. 66, Blk. A-3, I.&S.B. Sur. ... Top pay in sandy shale, 495 ft; ¼ baller oil and 3 bailers wtr. per day; S.D., 620 ft.

Donnell Pet. Co.'s No. 1 Mullican, C, Sec. 21, Blk. B, R. M. Thompson Sur. ... 200 ft. fluid in hole from 407-14 ft; S.D.

Expltn. Co.'s No. 1 Goodman ... S.D., 350 ft.

A. S. Mimm's No. 1 W. A. Ritcher, 700 ft. from E line and 1,200 ft. from S line, Sec. 17, Blk. X, John Glynn Sur. ... S.D., 1,140 ft.

Tolbert & Simms' (was Gouldy & Stone's) No. 1 Kitteral, SE cor. NW, Sec. 65, Blk. A-3, G.C.&S.F. Sur. ... S.D., 485 ft.

HALL COUNTY

Briscoe Oil Assn.'s (was Seifert et als') No. 1 Owens, C NE, Sec. 179, Blk. S-5, Dennison & Pacific Sur. ... Spudded and S.D.

HANSFORD COUNTY

Caldwell et als' No. 1 J. Adriance est. ... Drlg., 2,050 ft.

Oklavania et als' No. 1 Coots, Sec. 13, Blk. 45, H.&T. C. Sur. ... Run, 6-in; 900 ft. wtr., 3,940 ft; drlg., 3,337 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood ... S.D., 1,455 ft. to install rotary.

HARTLEY COUNTY

Amarillo Oil Co.'s No. 7 Lee Bivins "A," C NE, Sec. 7, Blk. 25, E.L.R.R. Sur. ... Rigging.

Amarillo Oil Co.'s No. 8 Lee Bivins "A," 100 ft. E of CWL, Sec. 4, Blk. 25, E.L.R.R. Sur. ... Rig.

Amarillo Oil Co.'s No. 9 Lee Bivins "A," C NW, Sec. 6, Blk. 21 ... Bldg. rig.

HUTCHINSON COUNTY

Alamoso Oil Co.'s No. 2 J. M. Sanford, Sec. 83, Blk. 46, H.&T.C. Sur. ... Drlg., 2,312 ft.

R. G. Barnum et als' No. 1 Garland Sanford, Sec. 78, Blk. 46 ... Spudding.

Barnum & Delmar's No. 1 Johnson Bros., NW cor. E half NW, Sec. 37, Blk. Y, A.&B. Sur. ... Drlg., 410 ft.

Beam et als' No. 1 Cockrell, Sec. 3, Blk. 28 ... S.D., 405 ft. for orders.

Big Coach Oil Co.'s No. 1 Dunnaway, Sec. 5, Blk. Y ... S.D., 750 ft.

Conklin et als' No. 1 Johnson, Sec. 1, Blk. X03, H.&O. B. Sur. ... S.D., 600 ft.

Dixon Creek Oil Co.'s No. 1 Burnett est., NW cor. of E 240 A of N 320 A, Sec. 130, Blk. 5, I.&G.N. Sur. ... 6,000,000 ft. gas, 2,775 ft; small show oil, 3,060-65 ft; T.D., 3,260 ft; plugged back to 3,195 ft; shot with 120 qts., 3,040-75 ft; C.O.

Friedman et als' No. 1 J. O. Bost, SW cor. Sec. 9, Blk. Y-2, T.T.R.R. Sur. ... U.R., 15-in., 200 ft.

Gulf Prod. Co.'s No. 40, C. L. Dial et al, 925 ft. N, 462 ft. E SW cor. John W. King Sur. ... Drlg., salt, 610 ft.

Gulf Prod. Co.'s No. 41 C. L. Dial et al, Sec. 130, Blk. Z, E.L.&R.R. Sur. ... Drlg. lime, 570 ft.

Harris et als' No. 1 J. Q. Bost, Sec. 10, Blk. Y-2, T.T. R.R. Sur. ... 20,000,000 ft. gas; S.D., 2,710 ft.

Holmes & Quinn's No. 1 J. K. Quinn, SW cor. Sec. 9, Blk. 3, B.S.&F. Sur. ... Small show oil, 3,010 ft. in lime. T.D., 3,142 ft; shot with 300 qts., 3,052-3,136 ft. in lime; C.O.

McKinney Gas Co.'s No. 1 F. P. Works, SW cor. Sec. 5, Blk. Y-2, T.T.R.R. Sur. ... Drlg., 1,050 ft.

Oil Operators Trust Co. and Marland's No. 2 J. M. Stanford-B, Sec. 82, Blk. 46, H.&T.C. Sur. ... Location.

Phillips Pet. Co.'s No. 2 Garland, Sec. 77, Blk. 46 ... S.D., 1,025 ft.

Phillips Pet. Co.'s No. 12 Elva-Whittenburg, E. Tomlinson Sur. ... T.A., 4,445 ft.

Phillips Pet. Co.'s No. 2 Chap, NE cor. E 80 acres of the S 160 acres of Sec. 78, Blk. 46 ... S.D., 1,010 ft.

Phillips Pet. Co.'s No. 2 Land, NW cor. of E 40 acres, N 80 acres of S 320 acres, Sec. 83, Blk. 46 ... Drlg., 900 ft.

Phillips Pet. Co.'s No. 5 Johnson Bros.-Dorsett, Sec. 64, Blk. 46, H.&T.C. Sur. ... Location.

Phillips Pet. Co.'s No. 6 Johnson Bros.-Dorsett, Sec. 64, Blk. 46, H.&T.C. Sur. ... Location.

Phillips Pet. Co.'s No. 13 J. A. Whittenburg, Sec. 63, Blk. 46, H.&T.C. Sur. ... Location.

Phillips Pet. Co.'s No. 14 J. A. Whittenburg, Sec. 63, Blk. 46, H.&T.C. Sur. ... Location.

Skelly Oil Co.'s No. 2 Armstrong & Byrd ... Set 12-in. csg., 1,425 ft; cmtd. 10-in. csg., 1,583 ft; drlg., 2,900 ft; small show gas, 2,815-25 ft; 9,000,000 ft. gas, 3,015-50 ft; drlg., 3,070 ft.

Skyrocket Oil Co.'s No. . Mrs. R. A. Jameson ... 300 ft. oil in hole from 3,146 ft; drilled to 3,190 ft; shot with 60 qts., 3,125-60 ft; bridged; no increase in oil after deepening; pumped 25 bbls. in 5 hrs; to put on gas lift for test; S.D.

Timms & Dietsch's No. 1 C. R. Garner, NE cor. W 80 A of SE, Sec. 124, Blk. 4, I.&G.N. Sur. ... Rig.

Wendell et als' No. 1 Johnson Bros., Sec. 1, Blk. X03 ... Set 10-in. csg., 2,035 ft. and S.D. rig burned.

Winrod Oil Co.'s No. 1 E. Cooper, Sec. 3, Blk. 9, I.& G.N. Sur. ... Location.

KING COUNTY

Humble O. & R. Co.'s No. 1 Pitchfork, Sec. 171, Blk. A-96, John H. Gibson Sur. ... Hole full wtr., 3,375 ft; U.R. 6-in csg., 4,025 ft.

A. L. Pattison's No. 1 Patton ... Slight show gas, 3,115-30 ft; fish. 3,410 ft.

LAMB COUNTY

Dan Freel et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... Spudded and S.D.

Spade Oil Co.'s No. 1 Andrews, 1,085 ft. from N line and 200 ft. from E line, Labor 23, League 643, (5 miles NE of Littlefield) ... Spudded and S.D.

Tolbert & Simms' No. 1 Ellwood, NE SW SW, Sec. 14, Blk. B, R. M. Thompson Sur. ... 712 ft; small show oil and hole full wtr.; dry, 1,504 ft; temp abd.

LIPSCOMB COUNTY

McCorkle's No. 1 A. Barton, NE cor. SW SE, Sec. 504, Blk. 43, H.&T.C. Sur. ... Wtr. in lime, 4,126-40 ft; 6-in. set 4,155 ft; 5 3/16-in. csg. set, 4,420 ft; S.D., 4,775 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles ranch ... Small show oil, 1,132-40 ft. in sand; S.D., 2,730 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Thompson-Amarillo, C, Sec. 23, Blk. 26, E.L.&R.R. Sur. ... Cmtng. 12-in. csg., 1,320 ft; U.R. 10-in., 2,510 ft.

Amarillo Oil Co.'s No. 1 J. T. Sneed, Jr., C W 640 A, Horace Hall Sur. ... Rig.

Amarillo Oil Co.'s No. 1 D. P. Seay, C, Sec. 85, Blk. 2, G.&M. Sur. ... Drlg., 560 ft.

Amarillo Oil Co.'s No. 1 L. H. Crawford, C SE, Sec. 26, Blk. P. M., E.L.R.R. Sur. ... Drlg., 900 ft.

Prairie and Shamrock's No. 2 Gober, Sec. 16, Blk. M-21 ... T.D., 2,520 ft; recmtd. csg., 3,638 ft.

MOTLEY COUNTY

Expltn. Co.'s No. 1 Burleson ... Spudded and S.D.

Expltn. Co.'s No. 1 Tillson ... S.D., 750 ft. for repairs.

Expltn. Co.'s No. 2 Matador Land & Cattle Co., C SW, Sec. 37, John Gibson Sur. ... S.D., 1,245 ft.

Expltn. Co.'s No. 3 Matador Land & Cattle Co., C SE, Sec. 21, Blk. O-2, W.T.R.R. Sur. ... Rig on ground.

Matador Oil Corp.'s (formerly Wheeler et als') No. 1 C. D. Bird, SW cor. NW, Sec. 4, Blk. S, Stephens Sur. ... Fish., 555 ft.

OCHILTREE COUNTY

W. G. Burton's No. 1 Strickler ... S.D., 4,010 ft.

POTTER COUNTY

Amarillo Oil Co.'s No. 1 Masterson-K, C SW, Sec. 85, Blk. O-18, D.&P.R.R. Sur. ... Recmtng. 12½-in. csg., 1,000 ft; show gas, 1,650 ft; T.D., 2,440 ft; S.D; 10,000,000 ft. gas showing little wtr., 1,650-60 ft. and 2,215-90 ft; run, 6-in., 2,440 ft; S.D., 2,665 ft.

Amarillo Oil Co.'s No. 2 Fuqua, C NW, Sec. 18, Blk. 6, B.S.&F. Sur. ... Drlg., 3,160 ft.

Amarillo Oil Co.'s No. 6 Lee Bivins-A, NW cor. NW, Sec. 32, Blk. B-11, E.L.R.R. Sur. ... Bldg. rig.

Amarillo Oil Co.'s No. 1 Lee Bivins-E, C NW, Sec. 27, Blk. O-18, D.&P.R.R. Sur. ... Rig.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Mrs. H. Ledrick & Sons, Sec. 7, Blk. 5-A ..... Show gas, 4,990 ft; show oil, 4,992 ft; csg. set, 4,992 ft; T.D., 5,158 ft; set 3-in., 5,155 ft; S.D. 5,240 ft.

SWISHER COUNTY

Adams & Pritchard's No. 1 Crawford, Sec. 39, Blk. W-1, T.T.R.R. Sur. ..... S.D., 440 ft.

WHEELER COUNTY

Angus et als' No. 1 T. Trostle, C NE NW, Sec. 90, Blk. 17, H.&G.N. Sur. ..... Set 15-in., 150 ft.

Byrens et als' No. 1 Johnson, SW cor. NE, Sec. 83, Blk. A-5, H.&G.N. Sur. ..... Run. 8-in., 900 ft.

Chapman & Morgan's No. 1 Otis Hatcher, NW cor. SW SE, Sec. 63, Blk. 17, H.&G.N. Sur. ..... Rig.

Hatcher et als' No. 3 fee, C SW SW, Sec. 80, Blk. 23, H.&G.N. Sur. ..... Drlg., 1,275 ft; show gas, 1,270 ft; run. 10-in., 1,400 ft.

Rook et als' (was Foster et als') No. 1 S. H. McDonald, SE cor. NW SW, J. N. Lindsay Sur. ..... T.L., 3,040 ft; S.D., 3,607 ft.

L. W. Rook's No. 1 M. Nelson, C SW NE, Sec. 5, Blk. 24, H.&G.N. Sur. ..... Spud.

L. W. Rook's No. 2 A Smock, C SW SE, Sec. 5, Blk. 24, H.&G.N. Sur. ..... Rig on ground.

Smith Brady et als' No. 1 P. J. Sorenson, Sec. 53, Blk. A-4 ..... S.D., 2,130 ft. for orders.

Vaughn et als' No. 1 B. Woodley, C SW NW, Sec. 21, Blk. 24, H.&G.N. Sur. ..... Rig.

Vaughn et als' No. 1 A. Wood, C NW SW, Sec. 21, Blk. 24, H.&G.N. Sur. ..... Location.

Kaufold et als' No. 1 E. R. Wallace ..... S.D., 300 ft.

Wischkamper's No. 1 Brown-Young, C NW NE, Sec. 55, Blk. 23, H.&G.N. Sur. ..... Cellar.

Wischkamper's No. 1 Gooch-Close, Sec. 81, Blk. 23, H. &G.N. Sur. ..... Spud and S.D.

Pete Woodley's No. 1 J. Boyle ..... Show gas, 1,700 ft; run. 5-in; T. D., 2,217 ft; 1,000 ft. oil and considerable wtr. 2,173 ft; fighting cave. 2,217 ft; cave let in wtr. and shut off oil.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 43)

Van McPhail et al's No. 1 George Thompson, C 10-acre tract No. 22, Sec. 70, Blk. 1 ..... Location.

W. W. Donnelly & Young's No. 1 Massey, Sec. 29, Blk. T-Y ..... Shut down 600 ft.

W. R. Simmons' No. 1 University, 150 feet N of C S line Sec. 1, Blk. 14 ..... Drlg. 855 ft.

Whonlick's No. 1 F. M. Halff, 150 ft. N of S line and 200 ft. E of Pecos River, Sec. 69, Blk. 1, I.&G.N. Sur. ..... Drlg. 652 ft.

World Oil Co.'s No. 1 Schneeman-B, Sec. 50, Blk. BB, G.C.&S.F. Sur. ..... Top salt 1,070 ft.; hole full salt water 2,210-15 ft.; set 6-in. 2,540 ft.; drlg. 2,830 ft.; hole full sulphur water; shut down 2,910 ft.

M. B. Werlck et al's No. 1 H. M. Halff, Sec. 68, Blk. 1, H.&G.N. Sur. ..... Shut down 1,400 ft.

Zoch's No. 1 University, SW cor. Sec. 16, Blk. 14 ..... Moving in material.

Young & Donnelly's No. 1 J. M. Shannon, C Sec. 11, Blk. 9, D.&S.E. Sur. ..... 7,000,000 ft. gas at 1,662 ft.; shut down 1,775 ft.

Young & Donnelly's No. 2 J. M. Shannon, Sec. 18, Blk. 10, G.C.&S.F.R.R. Sur. ..... Spudded and shut down.

Young & Donnelly's No. 1 J. S. Todd, Sec. 26, Blk. WX, G.C.&S.F. Sur. ..... Drlg. 590 ft.

CULBERSON COUNTY

Deep Rock Oil Co.'s No. 2 Kloh-Rumsey, Sec. 21, Blk. 20, T.&P.Sur., T-1 (NE of No. 1) ..... Shot with 20 qts. 1,555-60 ft.; no results; to plug.

Hickey & Stiver's No. 1 C. O. Finley ..... Drlg. 1,050 ft.

Scott & Dittman's No. 1 Miller, SW cor. NW NE Sec. 1, School Blk. 97 ..... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; shut down for casing 1,767 ft.

ECTOR COUNTY

Pennsylvania Drlg. Co.'s No. 1 W. E. Connell, C NE Sec. 7, Blk. B-16 ..... Location.

The Texas Company's No. 6 Cosden-Connell, NW cor. NW Sec. 10, Blk. B-16, PSL ..... Spudding 190 ft.

EL PASO COUNTY

Sillix et al's No. 1 W. D. Malone, Sec. 46, James M. Day Sur. ..... Location.

FISHER COUNTY

R. W. Raney's No. 2 Maberry, Sec. 56, Blk. 1, T.&P. Sur. ..... Shut down 3,160 ft.

Sinclair Oil & Gas Co.'s No. 1 F. Steele, NW NE NE Sec. 72, Blk. 1, H.&T.C.R.R. Sur. ..... Top lime 1,635 ft.; drlg. 2,130 ft.

FOARD COUNTY

Marland Oil Co.'s No. 1 J. H. Minnick, C NE Sec. 74, Blk. B, H.&T.C. Sur. ..... Drlg. 1,699 ft.

GARZA COUNTY

Latimer & Waggoner's No. 1 W. L. Cross, SW cor. Sec. 13, Blk. 4, K. Aycock Sur. ..... Location.

Marland Oil Co.'s No. 1 B. F. Pippin, C NW Sec. 1,216, W. C. Young Sur. (3,750-ft. test) ..... Top salt 960 ft.; drlg. by pipe 1,680 ft.

GLASSCOCK COUNTY

Texon & Marland's No. 1 Settles ..... Set 10-in. 1,420 ft.; top lime 2,015 ft.; hole full sulphur water 2,710-50 ft.; 5-in. casing 3,210 ft.; shut down 3,504 ft. to plug back.

Josey & Finchbaugh's No. 1 S. R. Cox, 1,320 ft. W of NE cor. and located on the N line of Sec. 29, Blk. 33, Twp. 4s, T.R.R.R. Sur. ..... Location.

Meriwether Oil Co.'s No. 1 L. S. McDowell, CNL Sec. 34, Blk. 34, T-2-S, T.P.R.R. Sur. ..... Top salt 995 ft.; pulling 8-in. casing 1,170 ft.; total depth 1,200 ft.

R. R. Penn's No. 1 Hughes & Johnson ..... Location.

World Oil Co.'s No. 2 L. S. McDowell, SW SE SW Sec. 32, Blk. 34, T-2-S ..... Building rig.

HOWARD COUNTY

F.H.E. Oil Co.'s No. 1 Dora Roberts, SW NE Sec. 136, Blk 29, W.&N.W.R.R. Sur. ..... Setting 8-in. casing 1,940 ft.

F. H. E. Oil Co.'s No. 3 Dora Roberts-A, 1,170 ft. S and 1,210 ft. W NE cor. Sec. 156, Blk. 29, W.&N.W. Sur. ..... Top pay 1,862-65 ft.; total depth 1,869 ft.; shot with 80 quarts 1,865-75 ft.; estimated 75 bbls.; cleaning out.

F. H. E. Oil Co.'s No. 4 Dora Roberts-A, 1,170 ft. S and 1,710 ft. S and 1,710 ft. W NE cor. Sec. 156, Blk. 29, W.&N.W. Sur. ..... Setting 6-in. casing 1,570 ft.

Godley Oil Co.'s No. 3 A. J. Hooks, Sec. 140, Blk. 29, W.&N.W. Sur. ..... Location.

Godley Oil Co.'s No. 4 A. J. Hooks, Sec. 140, Blk. 29, W.&N.W. Sur. ..... Location.

Green O. & R. Co.'s No. 1 H. R. Clay, SE cor. Sec. 127, Blk 29, W.&N.W. Sur. ..... Shut down for casing 945 ft.

Henshaw et al's No. 1 W. R. Settles, SW SE SW Sec. 135, Blk. 29 ..... Top pay 2,349-60 ft.; bit in hole; shut down 2,519 ft. for orders.

Lockhart et al's No. 2 Dora Roberts, Sec. 157, Blk. 29, W.&N.W. Sur. ..... Material on ground.

Magnolia Pet. Co.'s No. 7 Dora Roberts, SW NE SW Sec. 136, Blk. 29, W.&N.W. Sur. ..... Underreaming 12-in. casing 725 ft.; total depth 826 ft.

Marland Oil Co.'s No. Donnelly Clay, Sec. 127, Blk. 29... Location.

Marland Oil Co.'s No. 1 Richardson, C NW Sec. 12, Blk. 32, T.&P. Sur., T-1-S ..... Top salt 370 ft.; hole full salt water 2,235-2,300 ft.; hole full sulphur water 2,790-2,800 ft. and 3,010 ft.; pulling pipe to abandon 3,618 ft.

Maya, Nixon & Flowers' No. 1 W. J. Flowers ..... Little salt at 976-97 ft.; top salt 1,114 ft.; shut down 2,100 ft.

Merrick & Lamb's No. 4 H. R. Clay, CSL SE NE Sec. 126, Blk. 29, W.&N.W. Sur. ..... Location.

Miley and Marland Oil Co.'s No. 1 C. D. Read, C NW Sec. 12, Blk. 31, T.&P. Sur., T-1-N ..... Spudded and shut down 5 ft.

Owen & Sloan's No. 4 Dora Roberts, Sec. 136, Blk. 29 ... Drlg. 1,900 ft.

Pure Oil Co.'s No. 4 Otis Chalk, Sec. 125, Blk. 29, W. &N.W. Sur. ..... Ready to spud.

Sprague Oil Co.'s No. 1 Roberts ..... Spudded and shut down.

Sun Oil Co.'s No. 2 W. R. Settles, NW SE SE Sec. 135, Blk. 29 ..... Spudding.

Sweeney et al's No. 2 Chalk, Sec. 124, Blk. 29 ..... Location.

Sweeney et al's No. 4 Chalk, Sec. 124, Blk. 29 ..... Location.

Sweeney et al's No. 6 Chalk, Sec. 124, Blk. 129, W.&N. W. Sur. ..... Rig up and shut down.

Texon O. & L. Co. and Marland Oil Co.'s No. 2 W. R. Settles ..... Top lime 2,030 ft.; shut down 3,504 ft. for orders.

Texon and Marland's No. 3 W. R. Settles, C NE Sec. 160, Blk 29, W.&N.W. Sur. ..... Drlg. 730 ft.

Texon and Marland's No. 2 W. R. Settles-A ..... Fishing for bailer 845 ft.

Weekly Oil Corp. et al's No. 1 Dora Roberts, Sec. 156, Blk. 29 ..... Top lime 2,090 ft.; total depth 3,505 ft.; plugging back to 1,900 ft.

HUDSPETH COUNTY

American Land Co.'s No. 1 Lockhart and Roseborough, C SE Sec. 5, School Blk. 21 ..... Shut down 260 ft.

Western States Oil Co.'s No. 1 Moore, C SE Sec. 16, Blk. 71, T.&P. Sur., T-6 ..... Fishing 1,707 ft.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW Sec. 12, Blk. 18 ..... Drlg. 1,625 ft.

IRION COUNTY

P. F. Hill's No. 1 Horney, 150 ft. S and 450 ft. W of NE cor. SW of Sec. 2, Blk. 3, H.&T.C. Sur. ..... Shut down 1,600 ft.

Kimbrough & Tuel's No. 1 J. M. Nutt, 1,920 ft. S. 200 ft. E of NW cor. Sec. 5, Gonzales Co. School Land .... Drlg. 50 ft.

L. P. Powell et al's No. 1 Harlan Horney, 2,130 ft. N, 1,170 ft. E SW cor. Sec. 2, Blk. 3, H.&T.C. Sur. ..... Location.

F. E. Webb et al's No. 1 J. M. Nutt ..... Drlg. 770 ft.; sulphur water 730 ft.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means ..... Drlg. 2,685 ft.

Humble O. & R. Co.'s No. 2 Crecencio Flores, 1,130 ft. N and 850 ft. E of SW cor. Sec. 34, Blk. 58, T.&P. Sur., Twp. 8 ..... Drlg. 4,580 ft., dark gray lime.

JONES COUNTY

Garland & Diamond's No. 1 E. D. Glynn, SE cor. Sec. 18, Deaf & Dumb Asylum Lands ..... Hole full water 2,770-80 ft.; shut down 3,145 ft.

Midwest Exploration Co.'s No. 1 Sarah L. Phillips, SW cor. Sec. 16, Blk. 19, T.P.R.R. Sur. ..... Top pay 2,468-71 ft.; est. 12 bbls.; shut down 2,472 ft. for orders.

J. N. Sloan and others' No. 1 W. C. Bennett, NW cor. SW SE Sec. 42, Orphan Asylum Land ..... Spudded and shut down.

W. G. Stough and others' No. 1 J. P. Willis, J. C. Patterson Sur. No. 2 ..... Shut down 1,740 ft.

Teas & Wheeler's No. 1 Henry Sayles, C NE 34 acres, Sec. 3, Blk. 20, T.&P.R.R. ..... Drlg. 205 ft.

KENT COUNTY

J. S. Cosden & Co.'s No. 1 N. V. Bilby, Sec. 56, Blk. 98, H.&T.C. Sur. ..... Location.

Marland and Texon's No. 1 Bilby ..... Top salt 610 ft.; top lime 2,160 ft.; measuring hole 2,515 ft., contract completed.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Moore ..... Shut down 2,495 ft. for repairs.

Deep Rock Oil Co.'s No. 1 Big Four, 1,270 ft. S and 2,500 ft. W of NE cor. Sec. 21, Blk. 4 ..... Shut down 4,490 ft.

LOVING COUNTY

Delaware Oil Co.'s No. 1 Lockhart & Ramsey ..... Top salt 780 ft.; drlg. 4,065 ft.

Lockhart Bros.' No. 2 fee, 330 ft., 3,630 ft. W SE cor. Sec. 85, Blk. 33, H.&T.C. Sur. ..... Top salt 687 ft.; drlg. 2,220 ft.

Lockhart & Co.'s No. 1-A Lepp, Sec. 85, Blk. 33 ..... Total depth 2,260 ft.; fishing for tools.

Owens & Sloan's No. 1 W. D. Johnson, C SE Sec. 20, Blk. 53, T-2, T.&P. Sur., elev. 2,934 ft. ..... Top salt 955 ft.; total depth 4,808 ft.; waiting on orders.

LYNN COUNTY

Elpo Oil Co.'s No. 1 Nevois, NW cor. Sec. 6, Blk. C-42, School Lands ..... Drlg. 2,065 ft.

Hart Oil Corp.'s No. 1 C. O. Edwards A-1 ..... Rig.

MARTIN COUNTY

Phillips Pet. Co.'s No. 1 C. C. Slaughter, SE cor. Sec. 77, Bauer & Cockrell Sur. ..... Drlg. 200 ft.

MENARD COUNTY

Carpenter & Robbins' No. 1 Kothman, NW cor. SW SW Sec. 22 ..... Shut down 600 ft.

J. C. Barnett and T. H. Drake's No. 1 Callan City Co. Ranch, Sec. 22 ..... Drlg. 530 ft.

May & Clark's No. 1 Collen, Sec. 22, B.S.&F. ..... Shut down 505 ft.

Moody Oil Corp.'s No. 1 G. S. Allison, SE cor. Johann Kuhler Sur. No. 1,473 ..... Drlg. 1,190 ft.

Panhandle O. & R. Co.'s No. 1 G. P. Eckardt, C SW Sec. 10, Blk. 2, T.W.N.G.R.R. Sur. ..... Location.

Renfro et al's No. 1 J. Davis ..... Cleaning out 310 ft.

MIDLAND COUNTY

Gholson et al's (was Orbit Oil Co.'s) No. 1 Moreland, C SE Sec. 17, Blk. 39, T.&P. Sur., T-1-S ..... Top salt 1,910 ft.; shut down 3,510 ft., contract depth.

Shoup et al's No. 1 Roy Parks ..... Drlg. 1,010 ft.

MITCHELL COUNTY

Boehm Drilling Co.'s No. 1 Harry Hyman, C NW SE Sec. 90, Blk. 29, W.&N.W. Sur. ..... Shut down 505 ft.

California Oil Co.'s No. 8 C. M. Adams Lease No. 2, CSL NE NW Sec. 11, Blk. 28, Twp 1n, T.&P.R.R. Sur. .... Top lime 1,528 ft.; setting 6-in. casing 2,757 ft.

Magnolia Oil Co.'s No. 5 Foster, Sec. 17, Blk. 29, T.&P... Top lime 1,738 ft.; drlg. 2,815 ft.

Robert Thraves' No. 1 C. Way, Sec. 91, Blk. 27, T.&P. Sur., T-1-N ..... Total depth 2,503 ft.; shut down.

PECOS COUNTY

George Anderson's No. 1 University, C Sec. 11, Blk. 17.. Drlg. 990 ft.

Alexander & Lyle's No. 1 Myrtle Sellman, C SW SE Sec. 20, Blk. Z, T.C.Ry. Sur. ..... Location.

Benedum & Trees' No. 1 B. T. Corder ..... Shut down 494 ft.

Bob Elmore's No. 2 Holmes, SE cor. Sec. 45, Blk. 1, I.&G.N. Sur. ..... Top salt 435 ft.; shut down 990 ft.

Buell & Hagan's No. 1 Pryor & Wilson, Sec. 15, Blk. 5.. Top salt 1,445 ft.; shut down 2,508 ft.

Diamond Pet. Co.'s No. 1 Blackstone & Slaughter ..... Building rig.

M. C. Dibble & Hale's No. 1 Bonebrake, Sec. 115, Blk. 8, H.&G.W. Sur., elev. 2,555 ft. ..... Shut down 1,170 ft.

Ditto Oil Co.'s No. 1 J. M. Montgomery, Sec. 104, Blk. 331, A-6,387 ..... Spudded and shut down.

Douglas Oil Co.'s No. 2 Myrtle Sellman, Sec. 14, Blk. Z, T.C.R.R. Sur. ..... Hole full salt water 795-860 ft.; 25 ft. sulphur water 1,614-15 ft.

Furman Oil Co.'s No. 1 T. W. McNear, Jr., Sec. 46, Blk. 9 ..... Moving in material.

Everett et al's No. 1 J. Fields ..... Spudded and shut down.

Kirby Pet. Co.'s No. 1 University, NE cor. Sec. 36, Blk. 34, University Land ..... Top lime 1,305 ft.; shut down 1,366 ft.

Mid-Kansas O. & G. Co.'s No. 1 Pryor & Wilson, NW cor. Sec. 3, Blk 5, T.C.R.R. Sur. ..... Top salt 1,455 ft.; setting 6-in. casing 2,145 ft.

Phillips Pet. Co.'s No. 1 Nutt, SE cor. Sec. 8, Blk. 125... Fishing for tools 230 ft.

B. J. Spikes' No. 1 George Brown ..... Shut down 700 ft.

Roxana Pet. Corp. and Kirby Pet. Co.'s No. 1 University, Sec. 23, Blk. 34 ..... Shut down 480 ft.

Southern C. O. P. Co.'s No. 1 Scharbauer Cattle Co., SW cor. Sec. 21, Blk. 134, T.&St.L. Sur. ..... Shut down 355 ft.

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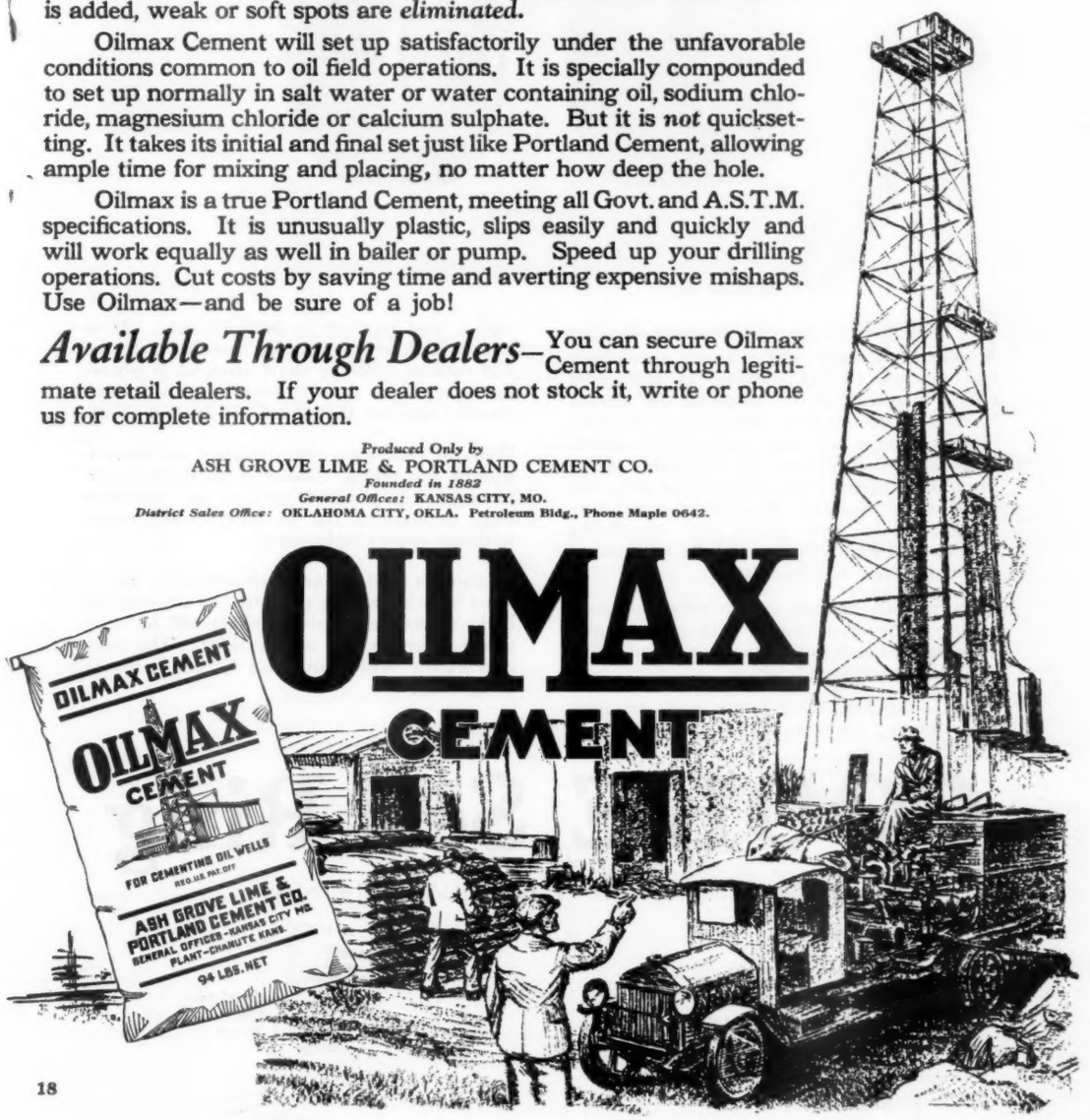

18

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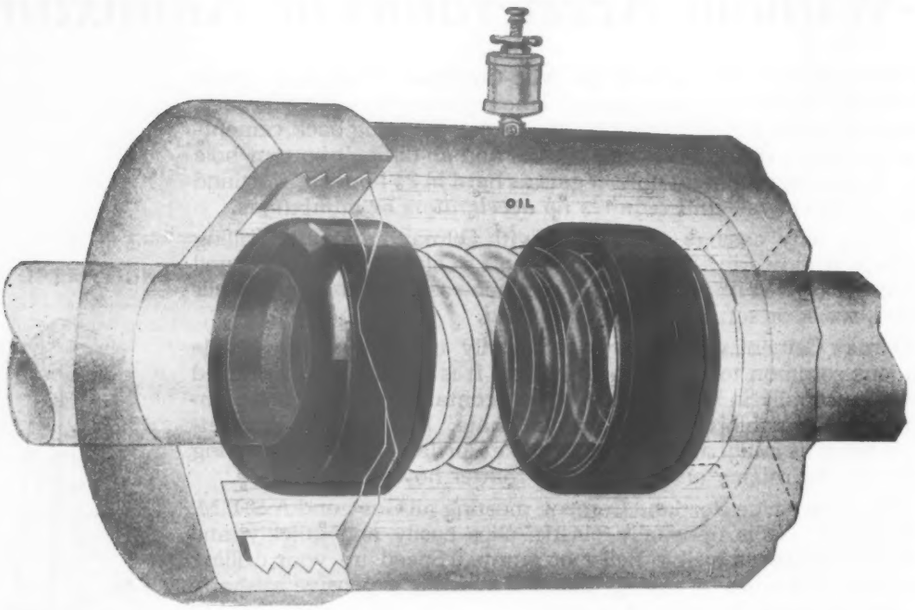

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Stidham & Thrasher's No. 1 Belgrade Ranch Co., Sur. 3, Mrs. S. Tompkins A-4,695 ..... Flowing sulphur water; shut down 2,020 ft.
Transcontinental Oil Co.'s No. 1 University, NE NW SW Sec. 18, Blk. 18 ..... Top lime 1,155 ft.; shut down 1,647 ft.
Vacuum Oil Co.'s No. 1 Elsinore Cattle Co., Sec. 60, Blk. D, G.C.&S.F. Sur. ..... Drlg. 2,565 ft.
World Oil Co.'s No. 1 Kloh, Sec. 47, Blk. 45, Twp. 5, T.P.R.R. Sur., elev. 2,810 ft. ..... Drlg. 1,180 ft.
World Oil Co.'s No. 1 Serf, C NE Sec. 10, Blk. 130, T.&St.L. Sur., elev. 3,435 ft. ..... Drlg. 2,965 ft.

Yates Pool, Pecos County

Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 6 River Bed ..... Rig.
Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 8 River Bed ..... Hole full of fluid, 35 per cent water; shut down 1,095 ft.
Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 9 River Bed ..... Location.
Pandem Oil and Gibson Oil Co.'s (was Allsman & Bell's) No. 13 River Bed ..... Location.
Pandem Oil and Gibson Oil Co.'s No. 14 River Bed ..... Location.
Pandem Oil and Gibson Oil Co.'s No. 15 River Bed ..... Location.
California Co.'s No. 2 Yates, Sec. 34, Blk. 194 ..... Rig.
California Co.'s No. 15 I. G. Yates, Lease 1, Sec. 34, Blk. 194 ..... 50,000,000 ft. gas from 1,085-1,109 ft.; flowing 400 bbls. hr.; shut down 1,109 ft., top of pay.
California Oil Co.'s No. 16 I. G. Yates, Lease 1, Sec. 34, Blk. 194 ..... Shut down 1,150 ft.
California Co.'s No. 1 Mrs. M. A. Smith, Lease 2, Sec. 26, Blk 194, G.C.&S.F. Sur. ..... Total depth 1,595 ft.; plugging back to 1,577 ft.
California Co.'s No. 12 Smith, Lease 2 ..... Drlg. 1,399 ft.
Humble O. & R. Co.'s No. 7 M. A. Smith, SW cor. NW Sec. 36, Blk. 194 ..... Top lime 1,305 ft.; top sulphur water 1,310 ft.; shut down 1,536 ft.
Matador Oil Co.'s No. 1 Smith, NW cor. SE NE Sec. 24, Blk. 194, G.C.&S.F. Sur. ..... Cellar.
McDonald et al's No. 1 A. A. Parsell, C NW SE Sec. 28, Blk. A, G.C.&S.F.R.R. Sur. ..... Shut down 100 ft.
McMan and Marland's No. 16 Yates, Sec. 34½, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 920 ft.
McMan Oil Co.'s No. 1 Mrs. M. A. Smith, SW cor. Sec. 104, Blk. 194 ..... Drlg. 1,130 ft.
McMann Oil Co.'s No. 2 Mrs. M. A. Smith, Sec. 104, Blk. 194 ..... Location.
McMann Oil Co.'s No. 2 Smith-B, 1,400 ft. S and 870 ft. W of NE cor. Sec. 104, Blk. 194 ..... Drlg. 935 ft.
Marland Oil Co.'s No. 11 Yates-A ..... Location.
Marland Oil Co.'s No. 12 Yates-A ..... Location.
Marland Oil Co.'s No. 13 Yates-A ..... Location.
Michaelson & Tabot's No. 1 River Bed ..... Top salt 430 ft.; shut down 2,012 ft.
Mid-Kansas and Transcontinental's No. 17 I. G. Yates-A, Sec. 31, Blk. 194 ..... Drlg. 1,206 ft.
Mid-Kansas and Transcontinental's No. 18 Yaes-A, Lease A-8,195 ..... Drlg. 410 ft.
Mid-Kansas and Transcontinental's No. 19 Yates-A, Tract A-8,195, G.C.&S.F. Sur. ..... Location.
Mid-Kansas and Transcontinental's No. 18 Yates-B ..... Show oil 1,095 ft.; flowed sulphur water 1,108 ft.; plugged back to 1,087 ft.; 400 ft. water; 300 ft. oil in hole.
Mid-Kansas and Transcontinental's No. 2 I. G. Yates-G, Sec. 34½, Blk. 194 ..... Location.
Mid-Kansas and Transcontinental's No. 9 Smith-Taylor. Drlg. 1,303 ft.
Mid-Kansas and Transcontinental's No. 15 Smith-Taylor, 2,250 ft. S. and 1,320 ft. E. of NW cor. Sec. 33, Blk. 194 ..... Location.
Red Bank Oil Co.'s No. 3 Mrs. M. A. Smith, Sec. 24, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 506 ft.
Roxana Pet. Corp.'s No. 1 Smith-B, 990 ft. S, 1,025 ft. W of NE cor. Sec. 24, Blk. 194 ..... Location.

PRESIDIO COUNTY

Headlock & Miller's No. 1 Tootle Est., Sec. 123, Blk. 3, D.&P. Sur., elev. 2,912 ft. ..... Salt water 2,610 ft.; total depth 3,003 ft.; shut down for orders.
Pinto Canyon Oil Co.'s No. 1 Fields, 1,760 ft. S and E NW cor. Sec. 74, Blk. 2, D.&P. Sur. ..... Location.

REAGAN COUNTY

California Oil Co.'s No. 4 University, NW cor. Sec. 3, Blk. 7 ..... Top salt 1,340 ft.; drlg. 2,970 ft.
Hagan & Emch's No. 1 E. W. Loftin, C E half Sec. 1,271, D.&S.E. Sur. ..... Top salt 1,065 ft.; drlg. 2,905 ft.
Marland Oil Co.'s No. 1 University, SE cor. SW Sec. 26, Blk. 8 ..... Top salt 1,360 ft.; drlg. 2,850 ft.
Moody Oil Co.'s No. 1 R. A. Walters ..... Spudding and shut down.
Roxana Pet. Corp.'s No. 1 University, NW cor. Sec. 30, Blk. 11, University Lands ..... Spudding.
Skelly Oil Co.'s No. 2 University, SE SW SE Sec. 35, Blk. 8 ..... Drlg. 2,235 ft.
Texon O. & L. Co.'s No. 1-B University, Group 1 ..... Top pay 6,250 ft.; 2,000 ft. oil; drlg. 8,100 ft.
White et al's No. 1 Shofner & Sterling, NE cor. NW Sec. 10, 2 mi. N of Big Lake ..... Top salt 1,275 ft.; shut down 2,886 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Shut down 2,170 ft.
Grisham-Hunter Corp.'s No. 1 Rathge & Connor, 600 ft. from N line and 5,760 ft. from W line of Sec. 26, Blk. 2, E.&G.N. Sur. ..... Top salt 1,037 ft.; drlg. 2,815 ft.
David R. Thompson's No. 1 A. A. Eddins ..... Shut down 5,499 ft. for casing.
Vacuum Oil Co.'s No. 1 Grisham-Hunter ..... Shut down 3,504 ft., contract depth.

RUNNELS COUNTY

Agnew & Schields' No. 1 R. R. Russell, in Mrs. H. Hollier, Sur. No. 13½ ..... Spudding.
Gibson & Johnson's No. 1 W. H. Rainwater, 660 ft. N and E of SW cor. of J. H. San Miguel Sur. (cor. location for No. 1 Harris) ..... Location.
Globe Pet. Co.'s No. 1 J. H. Webb, 500 ft. S and W of NE cor. J. H. Webb 115-acre tract out of G.C.&S.F. Sur. No. 2 ..... Location.
Jones Oil Syndicate's No. 1 W. Hale ..... Shut down 2,210 ft.
McLean et al's No. 1 G. W. Clayton ..... Shut down 1,050 ft.
Marland Oil Co.'s and E. L. Smith Oil Co.'s No. 1 A. C. Herring, C Sec. 121, E.T.R.R. Sur. (3,000-ft. test) ... Skidding rig.
Marland Oil Co.'s No. 1 R. R. Russell, near CSL J.F.G. Sur. ..... Drlg. 1,838 ft.
Kennedy et al's No. 1 J. E. Tally ..... Shut down 2,340 ft.
May et al's No. 1 J. M. Schneider, John Wall Sur. ..... ½ bailer salt water 1,033 ft.; hole full water 1,100-20 ft.; shut down 1,675 ft.
Miles Oil Co.'s No. 1 Charles Ray, Sec. 21, T.&N.O. Sur. ..... Cellar and machine.
Miles Oil Co.'s No. 1 L. S. Lawhon, NE cor. Sec. 68 ..... Show gas 960-80 ft.; shut down 2,450 ft.
Royal Pet. Co.'s No. 1 A. C. Willingham ..... Preparing to run 10-in. 1,410 ft.
R. B. Summers et al's No. 1 J. W. Reese, M. J. Parramore Sur. No. 26 ..... Shut down 750 ft.
Swensondale Oil Co.'s No. 1 E. A. Werner ..... Drlg. 3,005 ft.
Vacuum Oil Co., Lou Ladd et al's No. 1 J. S. Flanagan, NW cor. Subdivision No. 29, Domingo Diaz Sur. No. 532 ..... Rigging up.
Vacuum Oil Co. et al's No. 1 H. B. Fowler, Subdivision No. 23, Domingo Diaz Sur. No. 532 ..... Shut down 1,355 ft.
Watchorn O. & G. Co.'s No. 1 J. L. King ..... Underreaming 3,435 ft.

SCHLEICHER COUNTY

Beavers & Leath et al's No. 1 J. A. and W. T. Whitten, C NW Sec. 35, Blk. 11, T.O. Sur. ..... Shut down 400 ft.
J. F. Long and O. C. Long's No. 1 W. H. Williams, NE cor. Sec. 28, H.E.&W.T.R.R. Sur. ..... Rigging cable tools.

SCURRY COUNTY

J. B. Mims et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. ..... Rig.

STERLING COUNTY

Orr et al's (to be taken over by Empire G. & F. Co.) No. 1 Neal Reed, CNL Sec. 15, Blk. 30, W.&N.W. Sur. ..... Shut down 1,390 ft. (cor.).

STONEWALL COUNTY

Henshaw Oil Corp.'s No. 1 W. P. Moore, Sec. 136, Blk. 1, H.&T.C. Sur. ..... Drlg. 300 ft.

SUTTON COUNTY

J. D. Nantz et al's No. 1 G. Allison, C NE Sec. 29, Blk. B, H.E.&W.T.R.R. Sur. ..... Shut down 100 ft.
National Potash Co.'s No. 1 J. N. Ross ..... Shut down shale 1,329 ft.

TAYLOR COUNTY

A. J. Brown et al's No. 1 Henslee, NE cor. Sec. 5, Blk. 4, S.P.R.R. Sur. ..... Shut down 2,935 ft.
Dorning & Perrine's No. 1 J. A. Hammer, C N 100 acres, Sec. 23, Blk. 19, T.&P. Sur., elev. 1,904 ft. ..... Shut down 455 ft.
Gilbert Johnson and Day Bros.' No. 1 C. M. Brown, Sec. 1, Blk. 6, T.&P. Sur. ..... Hole full water 2,170-2,220 ft., cased off; shut down 3,003 ft., contract depth.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett ..... Location.
Champlin Ref. Co.'s No. 1 Corder, C Sec. 110, Blk. 1, C.C.S.D. Sur. ..... Drlg. 2,445 ft.
Deep Rock Oil Co.'s No. 1 H. C. Nolke, Sec. 4, Blk. A-2, T.C.R.R. Sur. ..... Drlg. 2,320 ft.
Humble Oil Co.'s No. 1 University, Sec. 15, Blk. 34 ... Drlg. 2,675 ft., broken lime
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Blk. D-7, E.L.&R.R. Sur. ..... Rig.
Milham Exploration Co.'s No. 1 Bassett, Sec. 77, Blk. Y, W. R. Robertson Sur. ..... Fishing 2,409 ft.
Bryan and Breen's No. 1 Allison & Burke, C NW Sec. 10, Blk. 176, Texas-Mex.R.R. Sur. ..... Rig.
Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.R.G.&N.G.R.R. Sur. ..... Rig.

TERRY COUNTY

Kingsland O. & P. Co.'s No. 1 Brownfield, C NW SW SW Sec. 7, Blk. 1-A, E.L.R.R. Sur. ..... Shut down 4,008 ft., contract depth.

TOM GREEN COUNTY

Collins et al's No. 1 Jones, CSL Sec. 646, Shaffer Sur. ... Rig.
Cox et al's No. 1 Llano ..... Drlg. 845 ft.
Fitzgerald's & Taliaferro's No. 1 Bennett ..... Shut down 1,955 ft.
Lone Eagle Oil Co.'s No. 1 Sharp, SE W Elzel Sur. No. 167 ..... Spudded and shut down.
Marland Oil Co.'s No. 1 J. W. Johnson-A ..... Drlg. 3,380 ft.
McLaughlin & Ridge's No. 1 R. Q. Holder, 3,140 ft. N and 80 ft. W SE cor. J. P. Parker Sur. (3,000-ft. test) ..... Drlg. 50 ft.
Tulsa Oil Co.'s No. 1 Adams, C SW Sec. 163, Blk. 11, S.P.R.R. Sur. ..... Shut down 1,020 ft.
Haubelt et al's No. 1 Johnson ..... Shut down 1,205 ft.
World Oil Co.'s No. 1 Mrs. F. T. March ..... Location.

UPTON COUNTY

Cowboy Evans and Wilburn's No. 1 University, Sec. 10, Blk. 15, University Lands ..... Drlg. 2,006 ft.
Mark Curtis et al's (was Hultz et al's) No. 2 Giddings, 5,336 ft. S and 6,678 ft. E of NW cor. Throckmorton Co. School Land, League 1, elev. 2,757 ft. ..... Shut down 975 ft.
Humble O. & R. Co.'s No. 8 R. Richer, in M. S. Denton Sur. No. A-127 ..... Top salt 570 ft.; drlg. 2,170 ft.
Penn and Atlantic's No. 1 Live Stock Exchange, Sec. 34, Blk. 38 ..... Underreaming 10-in. casing 1,567 ft.
The Texas Company and Cordova Union's No. 1 Union Land, Sec. 23, Blk. 35, H.&T.C. ..... Top pay 2,098 ft.; swabbed 60 bbls. in 36 hrs. at 2,271 ft., 2 per cent water; 2,200 ft. sulphur water 2,390-2,405 ft.; total depth 3,201 ft.; plugged back to 2,350 ft. and lost bailer; fishing.
Wise & Jackson's No. 1 J. H. Porter, SW cor. SW SW Sec. 184, Blk. E, elev. 2,592 ft. ..... Top pay 3,419 ft.; total depth 3,517 ft., gray lime; shut down.

VAL VERDE COUNTY

A. Blume et al's No. 1 Moore Est., Sec. 183, J. Mitchell Sur., elev. 953 ft. ..... Shut down 3,000 ft.
Curso Williams' No. 1 Holman, NE NE Sec. 5, Blk. N, G.H.&S.A. Sur. ..... Shut down 2,940 ft.
East Del Rio Oil Co.'s No. 1 Russell, SE cor. Sec. 183, Del Rio Town Sur., elev. 941 ft. ..... Shut down 3,320 ft.
Magnolia Pet. Co.'s No. 1 Whitehead, Sec. 81, D.G.C. &S.F. Sur., elev. 1,770 ft. ..... Drlg. 6,650 ft.
Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I.G.&N. Sur., elev. 1,175 ft. ..... Shut down 3,900 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Gas sand 2,491-2,520 ft.; tested 125,750 ft.; gas; reset 8-in. 2,511 ft.; shut down 4,210 ft.
W. B. Thraves et al's No. 1 W. E. Wilson ..... Shut down 930 ft.

WARD COUNTY

Alfredo Del Cambre's No. 1 Lee Monroe, Sec. 50, Blk. 33, H.&T.C. Sur. ..... Spudded and shut down.
Denver P. & E. Land & Investment Co., 990 ft. from NEL and 2,310 ft. from SEL, Sec. 215, Blk. 34, H.&T.C. Sur. (4,000-ft. test) ..... Rig.
E. H. Devore et al's No. 1 Black, Sec. 214, Blk. 34, H.&T.C. Sur. ..... Spudded and shut down.
Estex Oil Co.'s No. 1 W. A. Estes, C SW NE Sec. 4, Blk. B-29 (3,500-ft. test) ..... Shut down 370 ft. for water.
Great Basin Oil Co.'s No. 1 M. T. Eudaley, 2,200 ft. from NE line, 1,800 ft. from SE line, Sec. 36, Blk. 4, H.&T.C. Sur. ..... Top salt 541 ft.; drlg. 1,575 ft.
Rector Oil Co.'s No. 1 State, 990 ft. from NEL and NWL, Sec. 30, Blk. 4, H.&T.C.Sur. ..... Spudded and shut down.
Selby Oil Co. et al's No. 1 A. G. Dooley et al, Sec. 85, Blk. A, G.M.M.&A. Sur. ..... Setting 8-in. 2,205 ft.

WINKLER COUNTY

Amerada Pet. Corp.'s No. 1 J. B. Walton, SW cor. NW Sec. 48, Blk. 26, elev. 2,833 ft. ..... Fishing 2,502 ft.
Atlantic O. P. Co.'s No. 2 Grisham-Hunter-A, Sec. 34, Blk. B-5 ..... Shot 480 qts. 2,850-2,999 ft.; shot 960 qts. 2,800-2,991 ft.; no results; total depth 3,000 ft.; moving in rotary.
Atlantic O. P. Co.'s No. 7 Grisham-Hunter-A, NE SE E half SW Sec. 34, Blk. B-5 ..... Top lime 2,490 ft.; drlg. 2,855 ft.
Atlantic O. P. Co.'s No. 8 Grisham-Hunter-A, SE NE E half SW Sec. 34, Blk. B-5 ..... Top lime 2,456 ft.; drlg. 2,635 ft.
Atlantic O. P. Co.'s No. 2 Grisham-Hunter-E, NW cor. Sec. 41, Blk. B-5 ..... Drlg. 780 ft.
Atlantic O. P. Co.'s No. 3 Grisham-Hunter-E, CNL N half NE Sec. 41, Blk. B-5 ..... Location.
Atlantic O. P. Co.'s and Collett's No. 3 Hendrick-F, NW NE NW Sec. 40, Blk. 46 ..... Drlg. 2,038 ft.
Atlantic and Collett's No. 4 Hendrick-F, NE NW Sec. 40, Blk. 26 ..... Top lime 2,343 ft.; drlg. 2,521 ft.
Atlantic O. P. Co.'s No. 5 Hendricks-E, NE cor. Sec. 41, Blk. B-5 ..... Location.
Atlantic O. P. Co.'s No. 1 Grisham-Hunter-C (was Lemar), SW cor. Sec. 40, Blk. B-5 ..... Total depth 2,978 ft.; gas pressure split connections; est. 75,000,000 ft. gas; running wild; trying to kill gas; top salt 1,573 ft.; top lime 2,200 ft.
Atlantic O. P. Co.'s No. 3 Ida Hendricks-D, NW SE NW Sec. 29, Blk. B-5 ..... Top salt 1,415 ft.; top lime 2,568 ft.; gas 2,600 ft.; drlg. 2,917 ft.
Atlantic O. P. Co.'s No. 5 Ida Hendricks-D, SW SE S half NW Sec. 29, Blk. B-5 ..... Top salt 1,543 ft.; top lime 2,580 ft.; drlg. 2,585 ft.
Atlantic O. P. Co.'s No. 6 Hendricks-D, SE cor. SW S half NW Sec. 29, B-5 ..... Top lime 2,667 ft.; drlg. 2,670 ft.
Atlantic O. P. Co.'s No. 7 Hendricks-D, NW cor. SW S half NW Sec. 29, Blk. B-5 ..... Total depth 2,605 ft.; skidding 50 ft. east.
Atlantic O. P. Co.'s No. 8 Hendricks-D, SW cor. S half NW Sec. 29, Blk. B-5 ..... Building rig.
Atlantic O. P. Co.'s No. 1 Hendricks-G, SW cor. NW Sec. 46, Blk. 26 ..... Rigging up.

Atlantic O. P. and Collett's No. 2 Ida Hendricks-F ..... Top salt 1,984 ft.; top lime 2,458 ft.; drlg. 2,675 ft.

Atlantic and Collett's No. 5 Ida Hendricks-F, SE SW NW Sec. 40, Blk. 26 ..... Drlg. 1,165 ft.

Atlantic and Collett's No. 6 Ida Hendricks-F, SW SE NW Sec. 40, Blk. 26 ..... Setting 12-in. casing 720 ft.

V. T. Bolin et al's No. 1 Brown ..... Top salt 1,302 ft.; setting 6-in. casing 2,475 ft.

Cranfill & Reynolds' No. 1 Hendricks-D, SW NW NW Sec. 38, Blk. 26 ..... Drlg. 390 ft.

Danciger et al's No. 1 John Sealy, SW cor. NE Sec. 93, Bls. A, G.M.M.B.&A. Sur. ..... Top salt 1,085 ft.; drlg. 1,525 ft.

Gibson-Jonnson and Kessler & Logan's No. 1 Lack, C SW Sec. 3, Blk. 74 ..... Top salt 1,980 ft.; drlg. 2,977 ft.

Gibson-Jonnson's No. 1 Lunn Daugherty, SE NW SW Sec. 3, Blk. 74 ..... Location.

Gulf Prod. Co.'s No. 2 T. G. Hendricks, NE NW NW Sec. 34, Blk. B-5 ..... Rig standing.

Gulf Prod. Co.'s No. 8 T. G. Hendricks, Sec. 34, Blk. B-5.. Total depth 1,610 ft.; drlg. by tools 1,410 ft.

Gulf Prod. Co.'s No. 9 T. G. Hendricks, Sec. 34, Blk. B-5.. Top lime 1,837 ft.; top pay 2,824 ft.; flowing 100 bbls. per day, 50 per cent water; drlg. gray lime 2,981 ft.

Gulf Prod. Co.'s No. 11 T. G. Hendricks, Sec. 34, Blk. B-5.. Top salt 1,625 ft.; top lime 2,453 ft.; drlg. 3,050 ft.; 140 bbls. hr.

Gulf Prod. Co.'s No. 12 T. G. Hendricks, Sec. 34, Blk. B-5.. Top lime 2,342 ft.; top salt 1,410 ft.; fishing for packer 2,740 ft.

Gulf Prod. Co.'s No. 13 T. G. Hendricks, Sec. 40, Blk. B-5.. Drlg. hard lime 2,965 ft.

Gulf Prod. Co.'s No. 15 T. G. Hendricks, C NW SW NW Sec. 40, Blk. B-5 ..... Drlg 2,625 ft.

Gulf Prod. Co.'s No. 16 T. G. Hendricks, NW cor. Sec. 40, Blk. B-5 ..... Rigging up.

Gulf Prod. Co.'s No. 17 T. G. Hendricks, SE cor. NE Sec. 45, Blk. 26 ..... Rigging up.

Gulf Prod. Co.'s No. 18 Hendricks, 440 ft. from N and 330 ft. from E lines Sec. 45, Blk. 26 ..... Location.

Gulf Prod. Co.'s No. 19 Hendricks, 440 ft. from N and 330 ft. from W lines NE Sec. 45, Blk. 26 ..... Location.

Humble O. & R. Co.'s No. 1 Hendricks-B, NE NW SW Sec. 39, Blk. 26 ..... Location.

Humble O. & R. Co.'s No. 2 Hendricks-B, NW NE SW Sec. 39, Blk. 26 ..... Location.

Humble O. & R. Co.'s No. 2 Hendricks-C, SE NE SE Sec. 32, Blk. 26 ..... Setting 12-in. casing 924 ft.

Humble O. & R. Co.'s No. 3 Hendricks-C, SE NE NE Sec. 32, Blk. 26 ..... Drlg. 321 ft.

Humble O. & R. Co.'s No. 4 Hendricks-C, SE cor. NE Sec. 32, Blk. 26 ..... Rigging up.

Humble O. & R. Co.'s No. 5 Hendricks-C, NE cor. SE Sec. 32, Blk. 26 ..... Location.

Humble O. & R. Co.'s No. 6 Hendricks-C, NE cor. Sec. 32, Blk. 26 ..... Location.

Humble O. & R. Co.'s No. 1 J. B. Walton-B, SE cor. N half Sec. 47, Blk. 26 ..... Derrick.

Humble O. & R. Co.'s No. 1 J. B. Walton-A, NW cor. Sec. 48, Blk. 26 ..... Derrick.

Humble O. & R. Co.'s No. 3 Grisham-Hunter, Sec. 34, Blk. B-5 ..... Top salt 1,362 ft.; top lime 2,188 ft.; shut down 2,898 ft.; 50,000,000 ft. gas.

Humble O. & R. Co.'s No. 8 Grisham-Hunter ..... Top salt 1,240 ft.; top lime 2,323 ft.; shut down 2,915 ft.; mudding casing.

Humble O. & R. Co.'s No. 9 Grisham-Hunter, NE NE Sec. 34, Blk. B-5 ..... Top salt 1,310 ft.; total depth 2,188 ft.; repairing rig.

Humble O. & R. Co.'s No. 11 Grisham-Hunter, SW cor. W half NW Sec. 41, Blk. B-5 ..... Top lime 2,497 ft.; setting 6-in. casing 2,500 ft.

Humble O. & R. Co.'s No. 14 Grisham-Hunter, NE W half NW Sec. 41, Blk. B-5 ..... Drlg. 1,201 ft.

Humble O. & R. Co.'s No. 12 Grisham-Hunter, NE SW NE Sec. 34, Blk. B-5 ..... Top salt 1,689 ft.; top lime 2,339 ft.; drlg. 2,912 ft.

Humble O. & R. Co.'s No. 13 Grisham-Hunter, NW SE NE Sec. 34, Blk. B-5 ..... Drlg. 811 ft.

Humble O. & R. Co.'s No. 7 Ida Hendricks-B, SE NW N half SE Sec. 29, Blk. B-5 ..... Shut down 210 ft.

Independent O. & G. Co.'s No. 3 Grisham-Hunter, SE NW SW Sec. 34 ..... Top salt 1,485 ft.; top lime 2,505 ft.; drlg. 2,820 ft.

Independent O. & G. Co.'s No. 3 Vardeman-B, SE NE NW Sec. 41, Blk. B-5 ..... Top salt 1,340 ft.; top lime 2,328 ft.; total depth 2,860 ft.; shot with 60 qts. 2,700-62 ft.; 4,000,000 ft. gas.

Independent O. & G. Co.'s No. 5 Vardeman-B, NW SE NW Sec. 41, Blk. B-5 ..... Top salt 1,570 ft.; top lime 2,395 ft.; drlg. 2,400 ft.

Independent O. & G. Co.'s No. 6 Vardeman-B, NW cor. E half NW Sec. 41, Blk. B-5 ..... Drlg. 642 ft.

Independent O. & G. Co.'s No. 7 Vardeman-B, NE cor. E half NW Sec. 41, Blk. B-5 ..... Building rig.

Independent O. & G. Co.'s No. 1 E. W. Cowden, SE NW NW Sec. 36, Blk. B-5 ..... Drlg. 2,998 ft.; no increase in production.

Liner Drlg. Co.'s No. 1 Seth-Campbell, NE cor. Sec. 2, Blk. B-5 ..... Shut down 450 ft.

Landreth and Roxana's No. 1 E. W. Cowden-A, NW cor. Sec. 3, Blk. 12 ..... Drlg. 961 ft.

Landreth Prod. Co.'s No. 1 T. G. Hendricks-B, NW cor. E half NE Sec. 40, Blk. 26 ..... Top salt 1,496 ft.; drlg. by tools 1,844 ft.; total depth 1,849 ft.

Landreth and Roxana's No. 2 Hendricks-B, SE cor. E half NE Sec. 40, Blk. 26 ..... Rigging up.

Landreth and Roxana's No. 5 Ida Hendricks-A, NW NE SW Sec. 29, Blk. B-5 ..... Top lime 2,655 ft.; fishing 2,670 ft.

Landreth and Roxana's No. 6 Hendricks-A, NE cor. NW SW Sec. 29, Blk. B-5 ..... Top salt 1,543 ft.; cleaning out 2,630 ft.

Landreth and Roxana's No. 7 Hendricks-A, NW cor. SW Sec. 29, Blk. B-5 ..... Rigging up.

Landreth and Roxana's No. 1 T. G. Hendricks-C, NE NW SW Sec. 40, Blk. 26 ..... Drlg. 786 ft.

Landreth and Roxana's No. 1 Hendricks-D, NE cor. E. half SE Sec. 40, Blk. 26 ..... Rigged up and shut down.

Landreth and Roxana's No. 1 Hendricks-E, SE cor. W half NW Sec. 39, Blk. 26 ..... Location.

Marland Oil Co.'s No. 1 T. G. Hendricks, SE cor. W half Sec. 33, Blk. 26 ..... Drlg. 2,321 ft.

Marland Oil Co.'s No. 2 T. G. Hendricks, NE SE SE Sec. 33, Blk. 26 ..... Cellar.

Marland Oil Co.'s No. 3 T. G. Hendricks, NE SE SW Sec. 33, Blk. 26 ..... Top lime 2,365 ft.; setting 8-in. casing 2,368 ft.

Marland Oil Co.'s No. 4 T. G. Hendricks, SW NE SW Sec. 33, Blk. 26 ..... Rigging up.

Marland Oil Co.'s No. 5 T. G. Hendricks, NW NE SW Sec. 33, Blk. 26 ..... Location.

Marland Oil Co.'s No. 6 T. G. Hendricks, NE cor. SW Sec. 33, Blk. 26 ..... Location.

Magnolia Pet. Co.'s (was G. M. Church et al's) No. 2 Ida Hendricks ..... Show oil 2,750 ft.; top pay 2,865 ft.; total depth 2,961 ft.; ran 5-in. with packer to 2,955 ft.; failed to shut off water; plugging back.

Magnolia Pet. Co.'s No. 5 Ida Hendricks ..... Top salt 1,624 ft.; top lime 2,509 ft.; top pay 2,940 ft.; shut down 3,022 ft.; no production.

Magnolia Pet. Co.'s No. 7 Ida Hendricks ..... Top lime 2,448 ft.; top salt 1,365 ft.; setting 5-in. casing 3,005 ft.

Magnolia Pet. Co.'s No. 8 Ida Hendricks ..... Top salt 1,510 ft.; top lime 2,495 ft.; show oil 2,795 ft.; drlg. 2,950 ft.; flowing 150 bbls.

Murchison Oil Co. et al's No. 1 Grisham-Hunter-B, NE cor. SW SW Sec. 35, Blk. B-5 ..... Top salt 1,335 ft.; shut down 2,427 ft.

Murchison Oil Co. et al's No. 2 Grisham-Hunter-B ..... Location.

Mining & Engineering Co.'s No. 1 T. G. Hendricks, Sec. 10, Blk. B12 ..... Hole full fresh water; shut down 1,232 ft.

Murchison Oil Co. and Cranfill Bros.' No. 2 Grisham-Hunter-A ..... Location.

Murchison Oil Co. and Cranfill Bros.' No. 4 Grisham-Hunter ..... Location.

Murchison Oil Co. and Cranfill Bros.' No. 1 Hendricks-H (5-acre tract), Sec. 33, Blk. 26 ..... Top lime 2,403 ft.; setting 8-in. casing 2,405 ft.

Prairie O. & G. Co.'s No. 1 T. G. Hendricks, NW cor. E half SW Sec. 40, Blk. 26 ..... Building rig.

Pure Oil Co.'s No. 5 Hendricks-B, SE SW SE Sec. 34, Blk. B-5 ..... Top lime 2,420 ft.; top salt 1,412 ft.; shut down 2,762 ft.

Pure Oil Co.'s No. 6 Hendricks-B ..... Top salt 1,315 ft.; top lime 2,388 ft.; shut down 2,865 ft. for casing.

Pure Oil Co.'s No. 7 Hendricks-B, NE SE SE Sec. 34, Blk. B-5 ..... Top salt 1,212 ft.; top lime 2,331 ft.; drlg. 2,587 ft.

Pure Oil Co.'s No. 8 Hendricks-B, SE NE SE Sec. 34, Blk. B-5 ..... Top salt 1,479 ft.; drlg. 2,420 ft.

Pure Oil Co.'s No. 9 Hendricks-B, NW NE SE Sec. 34, Blk. B-5 ..... Top salt 1,240 ft.; drlg. 2,450 ft.

Pure Oil Co.'s No. 10 Hendricks-B, NE NW SE Sec. 34, Blk. B-5 ..... Drlg. 2,311 ft.

Pure Oil Co.'s No. 11 Hendricks-B, SW NW SE Sec. 34, Blk. B-5 ..... Top lime 2,404 ft.; drlg. 2,405 ft.

Pure Oil Co.'s No. 12 Hendricks-B, NW SW SE Sec. 34, Blk. B-5 ..... Top lime 2,420 ft.; drlg. 2,691 ft.

Pure Oil Co.'s No. 13 Hendricks-B, NW SE SE Sec. 34, Blk. B-5 ..... Top lime 2,395 ft.; setting 8-in. casing 2,397 ft.

Pure Oil Co.'s No. 14 Hendricks-B, NE SW SE Sec. 34, Blk. B-5 ..... Rig.

Pure Oil Co.'s No. 15 Hendricks-B, SE NW SE Sec. 34, Blk. B-5 ..... Material on ground.

Pure Oil Co.'s No. 16 Hendricks-B, SW NE SE Sec. 34, Blk. B-5 ..... Material on ground.

Pure Oil Co.'s No. 1 Grisham-Hunter-C ..... Shut down 2,471 ft.

Pure Oil Co.'s No. 2 Grisham-Hunter-C, SW cor. SE Sec. 45, Blk. 26 ..... Drlg. 390 ft.

Pure Oil Co.'s No. 3 Grisham-Hunter-C, SE cor. Sec. 45, Blk. 26 ..... Rigging up.

Pure Oil Co.'s No. 4 Grisham-Hunter-C, NE cor. SE Sec. 45, Blk. 26 ..... Rig.

Pure Oil Co.'s No. 6 Grisham-Hunter, NW SW Sec. 41, Blk. B-5 ..... Top salt 2,015 ft.; top lime 2,550 ft.; shut down 2,554 ft.

Republic Prod. Co.'s No. 1-A Grisham-Hunter-B, SW cor. E half SE Sec. 41, Blk. B-5 ..... Top salt 1,240 ft.; top lime 2,135 ft.

Republic Prod. Co.'s No. 3 Grisham-Hunter-B, NE cor. SE Sec. 41, Blk. B-5 ..... Top salt 1,380 ft.; top lime 2,340 ft.; drlg. 2,833 ft.

Republic Prod. Co.'s No. 2 Hendricks-A, NE E half SW Sec. 45, Blk. 26 ..... Top salt 1,240 ft... top lime 2,135 ft.; fishing 2,302 ft.

Republic Prod. Co.'s No. 3 Hendricks-A, SW NE SW Sec. 45, Blk. 26 ..... Rigging.

Republic Prod. Co.'s No. 4 Hendricks-A, SW cor. E half SW Sec. 45, Blk. 26 ..... Rigging.

Republic Prod. Co.'s No. 1 Hendricks-C, SW NE NE Sec. 42, Blk. B-5 ..... Drlg. 2,975 ft.

Republic Prod. Co.'s No. 2 Ida Hendricks-C, Sec. 42, Blk. B-5 ..... Mixing mud 1,500 ft.; lost returns.

Roxana Pet. Corp.'s No. 4 Hendricks-B, NE cor. SW S half SE Sec. 29, Blk. B-5 ..... Top salt 1,500 ft.; setting 8-in. casing 2,965 ft.

Roxana Pet. Corp.'s No. 5 Ida Hendricks-B, SE cor. SW S half SE Sec. 29, Blk. B-5 ..... Top salt 1,520 ft.; top lime 2,660 ft.; drlg. 2,774 ft.

Roxana Oil Corp.'s No. 6 Hendricks-B, SE cor. Sec. 29, Blk. B-5 ..... Drlg. 860 ft.

Roxana Pet. Corp.'s No. 3 Hendricks-C, SW cor. N half NW Sec. 29, Blk. B-5 ..... Top salt 1,555 ft.; top lime 2,615 ft.; drlg. 2,800 ft.

Roxana Pet. Corp.'s No. 4 Grisham-Hunter-D, NE cor. S half NE Sec. 41, Blk. B-5 ..... Top salt 1,230 ft.; top lime 2,266 ft.; fishing 2,795 ft.; flowing 300 bbls.

Roxana Pet. Corp.'s No. 5 Grisham-Hunter-D, SE SW NE Sec. 41, Blk. B-5 ..... Shut down 600 ft.

Roxana Pet. Corp.'s No. 6 Grisham-Hunter-D, SW SE NE Sec. 41, Blk. B-5 ..... Cellar.

Roxana Pet. Corp.'s No. 1 Grisham-Hunter-E ..... Mixing mud 2,646 ft.; lost returns.

Roxana Pet. Corp.'s No. 1 Hendricks-E, NW cor. SW Sec. 46, Blk. 26 ..... Drlg. 171 ft.

Roxana Pet. Corp.'s No. 2 Hendricks-E, SW cor. SW Sec. 46, Blk. 26 ..... Rigging up.

Roxana Pet. Corp.'s and Sun Oil Co.'s No. 2 W. F. Scarborough, SW cor. NE Sec. 1, Blk. C-22, School Land ..... Top salt 1,120 ft.; top pay 3,135 ft.; total depth 3,306 ft.; swabbing and bailing 60 bbls.

Sheldon & Burden's No. 1 Ida Hendricks, SW cor. SE Sec. 28, Blk. B-5 (10-a. tract) ..... Top salt 1,260 ft.; top pay 2,609 ft.; top pay 2,719 ft.; total depth 3,243 ft.; shut down.

Skelly Oil Co.'s No. 1 Hendricks, NW cor. W half NE Sec. 40, Blk. 26 ..... Total depth 2,313 ft.

Skelly Oil Co.'s No. 2 Hendricks, 330 ft. W, 440 ft. S NE cor. W half NE Sec. 40, Blk. 26 ..... Location.

Skelly Oil Co.'s No. 3 Hendricks, SE cor. W half NE Sec. 40, Blk. 26 ..... Location.

Skelly Oil Co.'s No. 4 Hendricks, NE cor. W half SE Sec. 40, Blk. 26 ..... Location.

Skelly Oil Co.'s No. 5 Hendricks, 450 ft. N and 330 ft. E of SW cor. W half SE Sec. 40, Blk. 26 ..... Location.

Skelly Oil Co.'s No. 1 Hendricks-B, SW cor. E half NW Sec. 39, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 2 T-39 Grisham-Hunter-A, Sec. 35, Blk. B-5 ..... Top salt 1,189 ft.; top lime 2,309 ft.; drlg. 2,460 ft.

Southern C. O. P. Co.'s No. 3 T-39-A Grisham-Hunter-A.. Top salt 1,072 ft.; top lime 2,352 ft.; drlg. 2,815 ft.; spraying oil.

Southern C. O. P. Co.'s No. 4 T-39-A Grisham-Hunter-A.. Rig.

Southern C. O. P. Co.'s No. 1 Ida Hendricks, 3-T-67-A, C SW NW NE Sec. 4, Blk. B-12, elev. 2,784 ft. ..... Top lime 2,638 ft.; top salt 1,525 ft.; drlg. 2,957 ft.

Southern C. O. P. Co.'s No. 2 T-67-A, NE SE Sec. 42, Blk. B-5 ..... Top salt 1,535 ft.; top lime 2,620 ft.; drlg. 2,863 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-A, NE cor. SE SE Sec. 42, Blk. B-5 ..... Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-67-A, SE cor. NE Sec. 42, Blk. B-5 ..... Location.

Southern C. O. P. Co.'s No. 2 Ida Hendricks 3-T-67-A.... Top salt 1,525 ft.; top lime 2,650 ft.; drlg. 2,990 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-3-A, Sec. 4, Blk. B-12 ..... Drlg. 2,428 ft.

Southern C. O. P. Co.'s No. 1 Ida Hendricks, T-67-E, SE NE Sec. 42, Blk. B-5 ..... Fishing for tools 2,600 ft.

Southern C. O. P. Co.'s No. 2 Ida Hendricks, T-67-E, NE cor. SE NE Sec. 42, Blk. B-5 ..... Drlg. 1,772.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-E, SE cor. NE NE Sec. 42, Blk. B-5 ..... Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-67-E, NE cor. Sec. 42, Blk. B-5 ..... Location.

Southern C. O. P. Co.'s No. 2 T-67, Ida Hendricks-F ..... Top salt 1,715 ft.; drlg. 2,268 ft.

Southern C. O. P. Co.'s No. 5 T-67 Ida Hendricks-C ..... Top pay 2,890 ft.; drlg. 3,025 ft.

Southern C. O. P. Co.'s No. 3 Hendricks, T-67-3B, NE NW SW Sec. 33, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-67-B, SE NE SE Sec. 44, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-67-B, NE SE SE Sec. 44, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 5 Ida Hendricks, T-67-B, SE cor. SE Sec. 44, Blk. 26 ..... Location.

K N O W

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WIRE LINES

Efficient operators are demanding proof of the grades of lines they put into service. They are using every effort to cut down the cost of shut downs.

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WILLIAMSPORT

Southern C. O. P. Co.'s No. 1 T-88 Ida Hendricks-C, NW cor. Sec. 28, Blk. B-5 ..... 6,000,000 ft. gas 2,665 gt.; top pay 2,883-96 ft.; 500 ft. oil; fishing jo 2,906 ft.; shut down for orders.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-88-C ..... Top salt 1,290 ft.; top lime 2,535 ft.; cleaning out.

Southern C. O. P. Co.'s No. 1 Ida Hendricks, T-88-G, SW SE Sec. 28, Blk. B-5 ..... Top lime 2,612 ft.; fishing 2,928 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-88-H, SW NW SW Sec. 28, Blk. B-5 ..... Top salt 1,300 ft.; top lime 2,695 ft.; drlg. 2,755 ft.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-88-I, NE SE E half NE Sec. 30, Blk. B-5 ..... Location.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-88-A, SE NE SE Sec. 44, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 5 Ida Hendricks, T-88-A, NE cor. Sec. 44, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 2 Ida Hendricks, T-88-I, SE NE E half NE Sec. 30, Blk. B-5 ..... Rigging up rig.

Southern C. O. P. Co.'s No. 3 Ida Hendricks, T-88-A, NE SE NE Sec. 44, Blk. 26 ..... Drlg. 450 ft.

Southern C. O. P. Co.'s No. 4 Ida Hendricks, T-88-I, SE cor. E half NE Sec. 30, Blk. B-5 ..... Location.

Southern C. O. P. Co.'s No. 1 T. G. Hendricks, T-88-K, NE cor. Sec. 41, Blk. 26 ..... Top salt 1,706 ft.; fishing 2,592 ft.; est. 25,000,000 ft. gas.

Southern C. O. P. Co.'s No. 2 T. G. Hendricks, T-88-K, SE NE SE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 3 T. G. Hendricks, T-88-K, NE SE NE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 4 T. G. Hendricks, T-88-K, SE NE NE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 5 T. G. Hendricks, T-88-K, NE SE SE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 6 T. G. Hendricks, T-88-K, SE NE SE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 7 T. G. Hendricks, T-88-K, NE SE SE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 8 T. G. Hendricks, T-88-K, SE cor. SE Sec. 41, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 1 Hendricks, T-88-M, SW cor. SE Sec. 33, Blk. 26 ..... Drlg. 2,053 ft.

Southern C. O. P. Co.'s No. 2 Hendricks, T-88-M, NW SW SE Sec. 33, Blk. 26 ..... Drlg. 1,031 ft.

Southern C. O. P. Co.'s No. 3 Hendricks, T-88-M, SE NE SW Sec. 33, Blk. 26 ..... Shut down 764 ft.

Southern C. O. P. Co.'s No. 4 Hendricks, T-88-M, SE NW SW Sec. 33, Blk. 26 ..... Drlg. 1,660 ft.

Southern C. O. P. Co.'s No. 5 Hendricks, T-88-M, SW SE SE Sec. 33, Blk. 26 ..... Rigging up.

Southern C. O. P. Co.'s No. 6 Hendricks, T-88-M, SE SW NW Sec. 33, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 7 Hendricks, T-88-M, NE SW NE Sec. 33, Blk. 26 ..... Location.

Southern C. O. P. Co.'s No. 1 E. G. Hutchings, T-90, NE cor. E half SE Sec. 47, Blk. 26, elev. 2,835 ft. ..... Top salt 935 ft.; top lime 2,340 ft.; fishing for stem 2,705 ft.

Southern C. O. P. Co.'s No. 1 Ida Hendricks, T-264, SE NE SE Sec. 5, Blk. B-12 ..... Location.

Texon O. & L. Co.'s No. 3 Grisham-Hunter-A, NW cor. W half SE Sec. 41, Blk. B-5 ..... Top salt 1,450 ft.; top lime 2,324 ft.; drlg. 2,571 ft.

Texon O. & L. Co.'s No. 4 Grisham-Hunter-A, NE cor. W half SE Sec. 41, Blk. B-5 ..... Rig and shut down.

Texon O. & L. Co.'s No. 3 Hendricks-B, SE W half SW Sec. 45, Blk. 26 ..... Top salt 1,485 ft.; drlg. 2,025 ft.

California Oil Co.'s No. 5 Hendricks, SE cor. E half NE Sec. 29, Blk. B-5 ..... Top lime 2,560 ft.; top salt 1,295 ft.; cleaning out 2,965 ft.

California Oil Co.'s No. 6 Hendricks, NW cor. E half NE Sec. 29, Blk. B-5 ..... Top salt 1,217 ft.; top lime 2,471 ft.; top pay 2,780 ft.; cleaning out 2,960 ft.

Winkler O. P. Corp.'s No. 1 T. G. Hendricks, NW cor. Sec. 33, Blk. 26 ..... Location.

TEXAS PANHANDLE FIELDS

(Continued from Page 44)

vey, had a small oil showing at 2,972 feet and made 2,000,000 feet of gas from pay at 2,779 feet. The gas has been exhausted and the well temporarily abandoned at 2,000 feet. Phillips Petroleum Co.'s No. 2 Davidson (Myson) NE NW NW Section 87, Block B-2, H.&G.N. Survey, has exhausted the 20,000,000 feet of gas found in the pay at 2,985 feet and has been abandoned at 3,210 feet. The Texas Company's No. 4 Bowers, SE SE Section 93, Block B-2, produced 60 bbls. daily from the granite wash at 3,150-58 feet. Viola Oil Corp.'s No. 1 G. H. Saunders had a hole full of water at 3,130-38 feet and has been abandoned.

Wheeler County

Clark and others' No. 1 J. D. Purcell, C NW SW Section 51, Block 17, H.&G.N. Survey, made 11,000,000 feet of gas at 1,720-1,885 feet.

WICHITA FALLS DISTRICT COMPLETIONS

Week Ending April 21

Archer County

Bridwell Oil Co. and others' No. 2 Wilson-A made 70 bbls. at 1,575-84½ feet. Fain-McGaha & United Producers Co.'s No. 8 Wilson-B found the pay at 1,563-75 feet and made 276 bbls. Frank Hutcheson's No 1 fee was dry at 1,177 feet. D. O. Johnson and others' No. 4 Wilson made 160 bbls. at 1,547-73 feet. Same associates' No. 5 Wilson made 145 bbls. at 1,556-65 feet. Petroleum Producers Co. and others' No. 2 Wilson-E found the pay at 1,575½-77 feet and made 165 bbls.

The following wells were reported as dry and abandoned: Simms Oil Co.'s No. 23 Turberville-A at 1,778 feet. Burns & Kelleher's No. 1 Lowery at 1,550 feet. Hines and others' No. 1 Andrews at 1,038 feet. Long and others' No. 1 Conner at 1,151 feet. Wright and others' No. 4 Wilson at 1,334 feet.

Clay County

Western Oil Corp. and others' No. 3 Wright made 10 bbls. at 842-50 feet.

Cooke County

W. J. Green and others' No. 1 Campbell-A was dry and abandoned at 1,924 feet. McElreath & Suggett's No. 1 Whaley was dry and abandoned at 2,340 feet.

Denton County

C. L. Harty and others' No. 1 Boner & Phillips was dry and abandoned at 595 feet.

Jack County

Shaw Oil Co.'s No. 9 Cullerset made 20 bbls. at 2,008-10 feet. The following wells were reported as dry and abandoned: Amerada Petroleum Co.'s No 1 Crawford at 541 feet. Same company's No. 2 Crawford at 680 feet. Same company's No. 3 Crawford at 658 feet. Same company's No. 4 Crawford at 710 feet.

Montague County

Bridwell-Heydrick and others' No. 6 McGaughy made 44½ bbls. at 1,574-1,607 feet. Continental Oil Co.'s No. 9 Salmon made 18 bbls. at 910-21½ feet. Pure Oil Co.'s No. 1 Loy and others made 7 bbls. at 798-812 feet.

Wichita Falls

T. M. Conrey's No. 13 H. Willis made 3 bbls. at 232-38 feet. Magnolia Petroleum Co.'s No. 138 H. Reilly made 28 bbls. at 1,344-54 feet. Rayle Farm Oil Co.'s No. 50 Rayle made 12 bbls. at 1,655-70 feet. Bridwell & Mayfield's No. 7 Womack made 19 bbls. at 1,316-29 feet. Coleman & Coppock's No. 6 Kemp-Kempner made 150 bbls. at 839-60 feet. Same company's No. 7 Kemp-Kempner made 60 bbls. at 849-60 feet. Same company's No 4 Kemp-Kempner, Lot 4, made 102 bbls. at 850-58 feet. Grayce Oil Co.'s No. 8 Overby made 15 bbls. at 680 96 feet. Grayce & Cotton's No. 6 Kemp-Kempner found the pay at 852-64 feet and made 50 bbls. Same associates' No. 12 Kemp-Kempner made 80 bbls. at 850-59 feet. T. F. Hunter's No. 31 Waggoner Brothers made 5 bbls. at 648-68 feet. Shappell Oil Co's No. 16 Kemp-Kempner-A found the pay at 1,620-27 feet and made 35 bbls.

The following wells were reported dry and abandoned: Bleakley & Kinnison's No. 8 Rexford at 505 feet Stump & Co.'s No. 1 Crudup at 1,813 feet. Chester Evert's No. 2 Cooper at 2,015 feet. Le Trout and others' No. 1 Munger at 1,808 feet.

Wilbarger County

Fain-McGaha's No. 4 Waggoner-M made 53 bbls. from the pays found at 2,354-60 feet and 2,441½-50½ feet. Phillips Petroleum Co.'s No. 8 Waggoner-JJ, made 65 bbls. at 2,402-06 feet. Prairie Oil & Gas Co.'s No. 5 Waggoner-B made 40 bbls. after a 20-quart shot at 2,361-70 feet. Staley, Wynne & Co.'s No. 1 Waggoner-B made 228 bbls. at 1,888-1,906 feet. McLaughlin Brothers No. 1 Guyer was dry and abandoned at 2,012 feet.

Young County

Allday Oil Corp.'s No. 4 Johnson-B made 50 bbls. from the pays found at 540-50 and 569-88 feet. Pennell Oil Co.'s No. 5 Boone made 7 bbls. at 490-515 feet. Riggs and others' No. 4 McKinley made 40 bbls. at 488-511 feet.

The following wells were reported as dry and abandoned: Hawthorne & Hodges' No. 1 Tucker at 1,200 feet. Kleiner and others' No. 1 Rowley at 608 feet. Myers, trustee, No 2 Johnson at 694 feet. Parker and others' No. 1 Holt at 600 feet. Willis and others' No. 1 Sparks at 752 feet. Wo-Mac Oil Co.'s No. 1 Farmer at 800 feet.

RANGER DISTRICT COMPLETIONS

Week Ending April 21

Brown County

Anna Bell Oil Co.'s No. 1 Hickman made 55 bbls. from pay at 1,253-75 feet. Henshaw Oil Corp.'s No. 7 Bush found the pay at 1,089-99 feet and made 225 bbls. Midland Oil Co.'s No. 2 Butler was shot with 30 quarts at 1,243-70 feet and made 165 bbls. M. L. Richards' No. 6 Curry made 40 bbls. after a 10-quart shot at 1,104-14 feet. John Harberton's No. 1 Jopling made 3 bbls. after a 90-quart shot at 1,661-86 feet. Spence and others' No. 1 Jacobs was shot with 70 quarts at 1,527-50 feet and made 10 bbls. of oil and 3 bbls. of water.

The following wells were reported as dry and abandoned: Amerada Petroleum Co.'s No. 1 Graham estate, at 1,257 feet. Clark-Buffalo's No. 3 Perry was abandoned at 1,110 feet after an ineffective shot of 10 quarts at 1,093-96 feet. Cranfill & Reynolds' No. 2-B Hill at 1,316 feet. Same company's No. 2-A Newton at 1,143 feet. Scrivenor and others' No. 1 Windham at 1,450 feet. Wentz & Smith-Lock Petroleum Co.'s No. 1 Keeler at 1,250 feet. A. M. Wilbern's No. 1 Tyler & Thomas at 1,502 feet.

Callahan County

Bradstreet's No. 5 Waller was dry and abandoned at 1,763 feet. Davis & Barbee's No. 1 Harris was dry and abandoned at 2,815 feet. Kingwood Oil Co.'s No. 1 Berry was dry and abandoned at 1,504 feet.

Coleman County

Mid-Western company's No. 2 Morris was drilled to the total depth of 3,667 feet and produced 1,724,000 feet of gas from pay at 2,262-68 feet. Roth & Faurot's No. 2 Stevens made 2,250,000 feet of gas at 2,062-68 feet. Smith and others' No 1 Hill made 10 bbls after a 60-quart shot at 1,844-57 feet. Syndicate & Manhattan's No. 1 Hunter Brothers was dry and abandoned at 2,018 feet.

Eastland County

Gholson and others' No. 1 Jones made 165 bbls. at 3,390-3,418 feet. Lone Star Gas Co.'s No. 1 Anderson made 2,500,000 feet of gas at 3,071-81 feet. Same company's No. 2 Anderson was dry and abandoned at 3,500 feet. Heath and others' No. 1 Woods was dry and abandoned at 1,680 feet. Adamson & Bearman's No. 1 Jones was dry and abandoned at 1,173 feet.

Shackelford County

Gilman & McMurray's No. 1 Davis made 7 bbls. at 1,489½-94½ feet. Petroleum Producers Co.'s No. 1 Matthews found the pay at 1,134-60 feet and made 620 bbls. Crabb & McNeil's No. 1 Albany was dry and abandoned at 1,162 feet. Hogan and others' No. 1 Flippen was dry and abandoned at 1,303 feet.

Stephens County

Hanlon Gasoline Co.'s No. 1 Vick was dry and abandoned at 3,685 feet. Hickok Production & Development Co.'s No. 1 Tomlinson was dry and abandoned at 3,780 feet.

ESTIMATED DAILY AVERAGE PRODUCTION, NORTH TEXAS

Week ended April 21

Panhandle—	Bbls.
Carson County	7,365
Gray County	18,985
Hutchinson County	41,750
Moore County	226
Potter County	35
Wheeler County	890
Total this week	69,240
Total last week	71,845
Decrease	2,605
Wichita Falls district—	
Archer County	22,392
Baylor County	83
Clay County	522
Cooke County	3,241
Jack County	1,425
Montague County	9,119
Throckmorton County	1,039
Wichita County	27,546
Wilbarger County	12,961
Young County	6,399
Total this week	86,727
Total last week	85,334
Increase	1,393
Ranger district—	
Brown County	12,969
Callahan County	3,741
Coleman County	1,651
Comanche County	1,338
Palo Pinto County	447
Ranger	7,777
Shackelford County	9,494
Stephens County	6,370
Total this week	45,787
Total last week	45,235
Increase	552
Grand total this week	201,754
Grand total last week	202,414
Decrease	660

ESTIMATED DAILY AVERAGE PRODUCTION WEST TEXAS

Week ended April 21

Crane County	62,473
Crockett County	2,372
Ector County	13
Fisher County	215
Howard County	3,585
Jones County	1,325
Loving County	125
Mitchell County	3,345
Reeves County	50,521
Reagan County	18,314
Runnels County	130
Scurry County	34
Upton County	13,437
Winkler County	217,351
Total this week	373,341
Total last week	341,314
Increase	32,027

DEATH OF DRILLER OF UNITED STATES WELL

OIL CITY, Pa., Apr. 21.—Christian C. Dale, aged 84 years, well-known pioneer oil man, died at his home on the Dale farm near Plumer Saturday. He had been confined to his bed for 13 weeks as the result of a broken hip sustained in a fall.

Mr. Dale was the oldest pioneer of the Venango County oil fields. Becoming a drilling contractor at an early age, he took part in the opening of the first Oil Creek excitement and following the trend of development drilled at Pithole and at Shamburg.

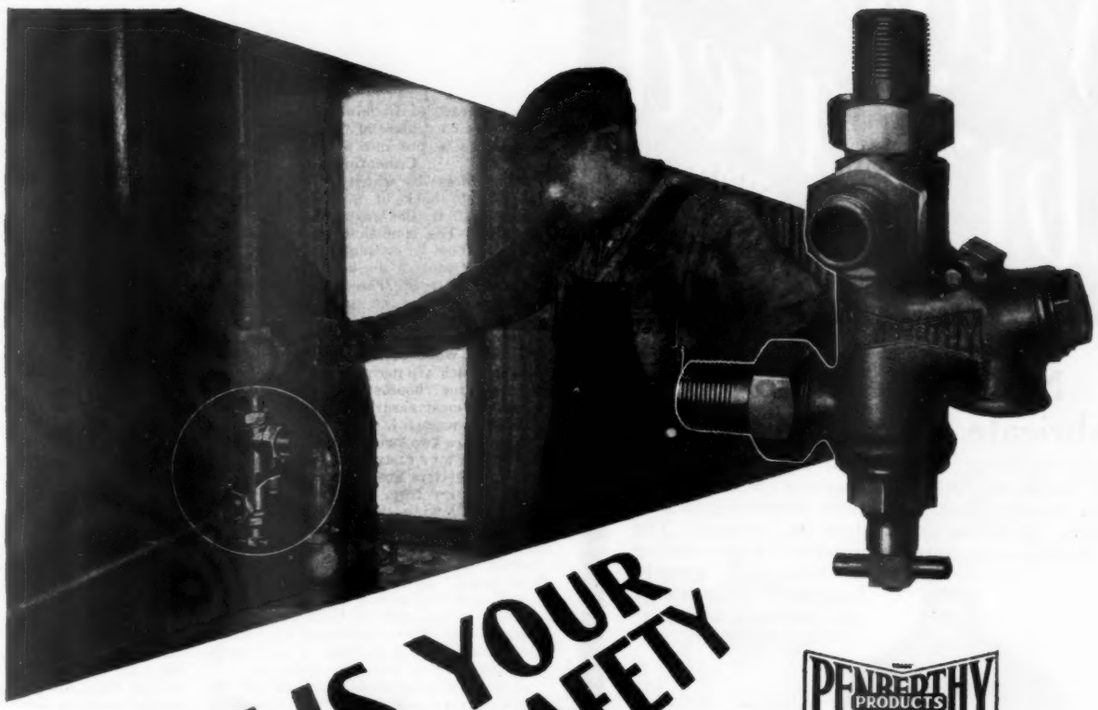
While at Pithole he was the drilling contractor for the famous United States well. During his association with the oil industry he used every method of drilling from the crude spring pole to the development of steam.

After the Oil Creek and Pithole excitements Mr. Dale contracted for drilling wells in the Bullion and Butler County fields.

PHILLIPS PETROLEUM ELECTION

The board of directors and officers of the Phillips Petroleum Co. were re-elected at the annual stockholders meeting of the company as follows: Frank Phillips, president; L. E. Phillips, H. E. Koopman, John Kang, F. L. Dunn, W. N. Dane, and Clide Alexander, vice presidents, and B. H. Hudson, general counsel.

The directors are: R. P. Brewer, Tulsa; Eugene E. Dupont, Wilmington, Del.; E. P. Earle, R. H. Higgins, J. L. Johnston, F. E. Loomis and John Markle, all of New York.



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The structural steel work in your derrick is figured with an adequate factor of safety. Your boilers and fittings are designed with a large safety factor. ¶ But what of your equally important boiler feed water system? ¶ The Penberthy Automatic Injector supplies that factor of safety. It removes every vestige of uncertainty, delay or trouble from your boiler feed water supply. ¶ There is a Penberthy Injector suited to your specific requirement. Penberthy Products for oil field power units are carried in stock bv leading supply houses.

PENBERTHY INJECTOR COMPANY

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In supplying water for oil field and refinery use, purity is essential. Oiled bearings are apt to contaminate the supply. But in Pomona Centrifugal Turbine Pumps no oil is used below the surface. The unique bearings are water lubricated. Sand cutting is overcome, greatly lengthening the life of the bearings and preventing vibration.

Highest efficiencies are maintained—frequently 20% higher.

50 to 5,000 gallons per minute from any depth. Direct connected and belted heads.

Ask for Engineering data.

Pomona Mfg. Co., Pomona, Calif.
Builders of Pumping Equipment Since 1902

Pomona Centrifugal Turbine Pumps

LANDING AND CEMENTING LONG WATER STRINGS

(Continued from Page 101)

some idea of the time required to put in casing of various sizes:

Size csg. (in.)	Wt. (lb.)	No. of lines	Depth set (ft.)	Time (hr.)	Remarks
16	..	..	..	..	103 ft. per hr.
11	60	9	4724	22	10 men; 215 ft. per hr.
11	60	8	..	..	120 ft. per hr.
8¼	36	..	4500	18	250 ft. per hr.
6¼	..	..	5600	24	1000 ft. w'ld'd. 233 ft. per hr.
4¾	..	..	4900	13	377 ft. per hr.

An average of 75 joints in eight hours gives a fair estimate of the rate at which casing can be put into a well.

Cementing

The process by which cement is placed in position back of a water string is immaterial if the required results are obtained. The conditions under which the task must be accomplished is the governoring factor in deciding on the method to be employed. The dump bailer method of cementing, as used in the early days of the industry, may be used now in shallow territory with good results. However, when setting water strings at depths which are necessary in some fields, the operator chooses that method which gives the most assurance, in his opinion, of being successful.

There are two principal methods of cementing water strings. In one method suitable barriers are used to separate the cement slurry from the mud fluid ahead of and following the column of cement in the casing. In the other method no barriers are used and the mud fluid and cement are in contact. The use of "Perkins plugs," as they are termed, is patented, and the method involving the use of them is controlled in California by the Perkins Oil Well Cementing Co. Aside from the use of plugs there is practically no difference in the two methods.

A cementing operation includes all the work directly connected with handling and placing the cement in the position where it is to function in an oil well. The cementing equipment is set up at the well and the necessary connection made. The required amount of cement should be on the ground, ready for use. The amount of cement to be used is calculated for each well and varies directly with the height to which it is desired to force the cement back of the water string. The modern cementing equipment is mounted permanently on a truck and consists of a power unit, either a steam or gasoline engine, to operate the equipment; two pumps, one capable of building up medium pressure and the other high pressure; mixing equipment for preparing the cement slurry; and suitable tanks for holding and measuring the mud fluid to be used for displacing the cement from the casing. Suitable and ample connections are a part of the equipment. The cement mix is about 78 cubic feet of water to each 100 sacks of cement which gives 125 cubic feet of slurry.

Cementing Outfit

The modern cement outfit is mounted on a truck. The smaller of the two pumps is the high-pressure pump, capable of as much as 1,500 pounds per square inch pressure. This pump handles the cement slurry and also the displacing fluid after the limiting pressure has been reached by the mud pumps in the derrick. The larger, low-pressure pump is used to force water into a suitable chamber for mixing with the cement, it being necessary to use mechanical mixers entirely, in order to be able to handle from 400 to 600 sacks of cement in one to two hours. The large tank on the rear of the truck has two compartments in which the displacement fluid is measured. If chemical accelerator is to be used in the cement, it is prepared in one of these tanks and pumped into the mechanical mixer when wanted. These compartments are constructed to hold 2 bbls. of fluid per inch in depth. When displacing the cement, one compartment is filled with mud fluid from some source of supply while the fluid in the other is being pumped into the well. This gives an accurate gauge at any time of the volume of mud fluid in the casing on top of the cement column.

When the circulating mud fluid through the casing indicates that the condition of the hole is satisfactory and with the shoe of the casing just enough above bottom to permit the cement to pass around it, usually about 1 foot, the cement is started into the hole. If the "Perkins" method is used, circulation must be stopped momentarily while the first plug is placed in the top of the casing just ahead of the cement. A MacClatchie head is generally used by the Perkins company because it can be so quickly removed and replaced for the purpose of putting in the plug that very little time is required during which circulation must stop. The cement is mixed as rapidly as possible into a slurry and pumped by the high-pressure pump down the casing. When it is all placed within the casing the mud pumps in the derrick are immediately started and mud fluid pumped in on top of the cement. With the "Perkins" method the second plug is placed similarly to the first one, between the cement and the mud fluid which is to follow. The fluid pumped in on top of the cement column is known as the displacing fluid and its volume should be accurately measured as it is pumped in. This mud fluid should be free from gas or air so as not to be compressible. When a volume of displacing fluid has been pumped in equal to the calculated volume of the casing to a depth where the top of the cement is planned to be left in the casing, the pumps are shut down and the well closed in. Practically all of the cement must now be back of the casing, in position to effect a water shut-off. When the "Perkins plugs" are used a check on the calculated volume of displacing fluid necessary is obtained by the sudden stopping of the pumps when the two plugs come together at the baffle or float valve.

This is possible because the body of the first plug is considerably smaller than the inside diameter of the casing but is fitted to the pipe with a disc of rubber packing near the top and has a hole through one side and through the center near the lower end which allows the cement slurry to pass the plug when it stops at the bottom of the casing. The second plug is fitted snugly to the pipe with a flexible cup packing which will not allow the mud fluid to pass when it is stopped in the pipe by the first plug.

Method of Operation

At the time the cement column reaches the shoe of the casing and starts out of the pipe the shoe should be just above bottom if there is a shoulder or plug in the well or a little below the cementing point if the hole is full size. The casing should not be moved until sufficient cement has passed around the shoe to reach a considerable distance up behind the casing, and it can be reasonably assumed that no mud is left on the walls of the hole which will slough into the cement column. By so doing the cement column in close proximity to the shoe is not broken by short columns of mud fluid. Should the cement start around the shoe of the casing when the shoe is some distance above the point to be cemented, a column of mud would be left in the column of cement when the shoe is lowered to its cementing point. Once a continuous cement column is formed back of the casing from the cementing point upward, the shoe may be moved up and down through it at will during the operations.

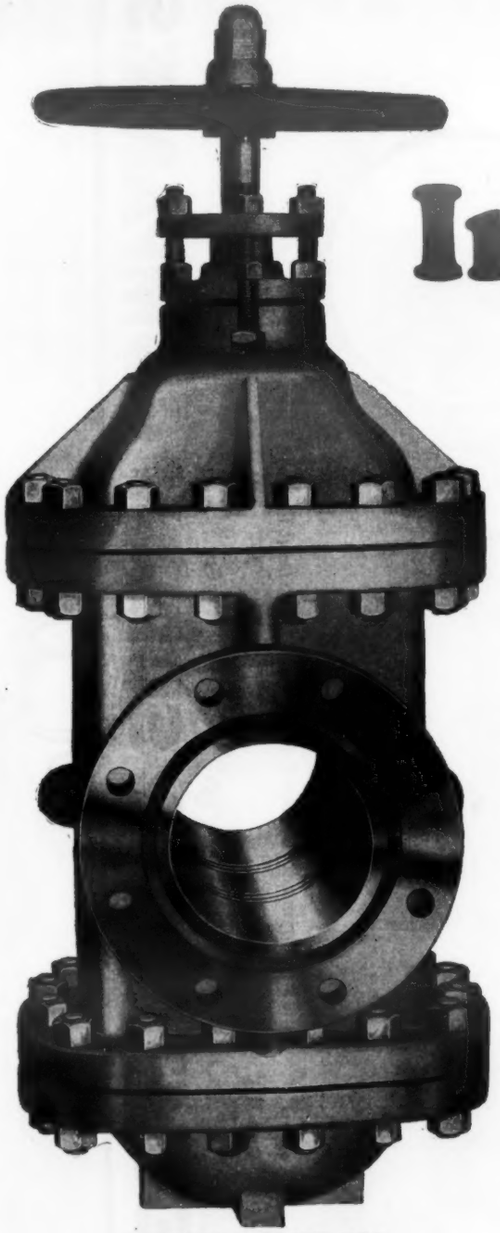
Moving the casing through a vertical distance equal to the average length of the joint is believed to be a material aid in preventing the channeling of the cement behind the casing. Wherever the string of casing cemented is so heavy as to prevent it being pulled up, channeling may take place unless the casing happens to be well centered in the bottom portion of the hole.

In displacing a large quantity of cement from the casing, high pump pressure is required to overcome the difference in pressure between the cement and mud fluid column back of the casing and the mud fluid inside the casing. To aid in displacing the cement, a heavy mineral, such as hematite or barite, is generally added to the mud fluid used for displacement.

The cementing of a deep water string

(Continued on Page 124)

The Story In a Nut Shell



PATENTS APPLIED FOR

OPEN

—Operates with ordinary hand wheel and single stem.

—When in full open position, a simple mechanism interlocks between the valve seats, forming a smooth unbroken flow-way.

—Protects seats from abrasion from foreign matter in fluid.

—Seals valve cavity against accumulation of debris.

—Eliminates vortex and all frictional resistance to flow.

—Affords free passage for line scrapers, leaving no after deposits in valve.

—Assures free movement of parts and full closure of discs on perfect seats.

—Automatically cuts off fluid passage to stuffing box. CAN BE REPACKED UNDER FULL LINE PRESSURE.

—Positive shut-off when in closed position.

—Prevents sizing or diversion of fluid in transit.

—Reduces maintenance costs.

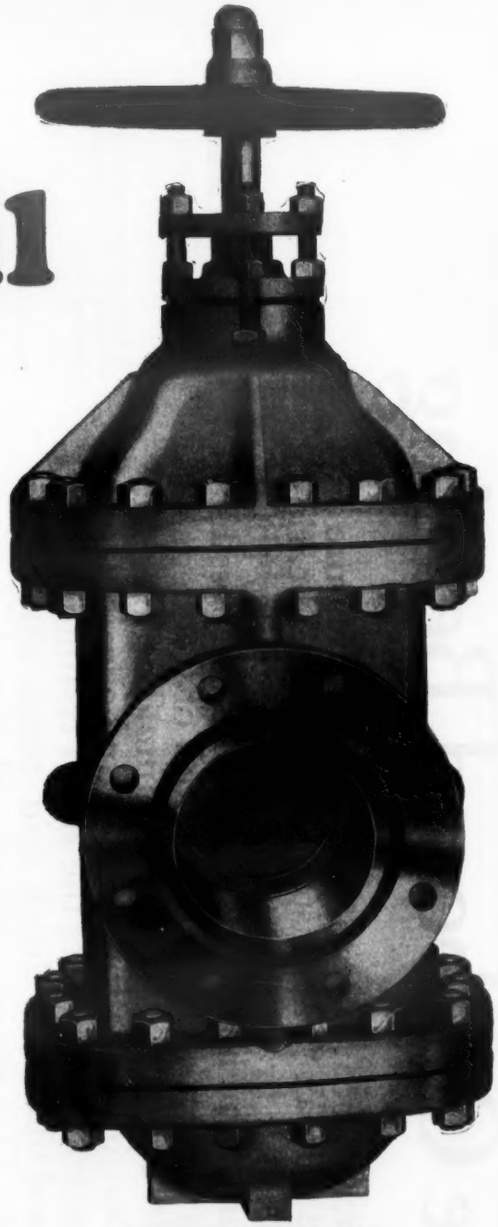
—Eliminates losses caused by inoperative valves in case of fire or line breaks.

—Functions perfectly at any angle at all line pressures.

—Tested to 2000 lbs. hydrostatic pressure for working pressures up to 750 pounds.

LAW CONDUIT VALVE

DeSoto Foundry & Machine Co., Ltd.
Mansfield, La.



PATENTS APPLIED FOR

CLOSED

The Outboard Bearing

The Outboard Bearing is an added feature on the Climax "Paymaster Junior." This bearing acts as a brace and supports the pulley shaft against the belt load. As a result, the possibilities of breakdowns, delays and of frequent repairs are reduced to a minimum. The long skid mounting, plus the new bearing eliminates vibration and relieves the strain commonly imposed upon the clutch and crank shaft bearings. This means still smoother tool motion. And now more than ever, contractors and drillers are assured of constant high-speed drilling.

CLIMAX ENGINEERING COMPANY
76 W. 18th Ave. Clinton, Iowa

What the New Outboard Bearing and Climax Paymaster Junior Gives You

A light, easy-to-move-around drilling unit rigidly mounted on steel skids.

An outboard bearing that virtually eliminates vibration and adds years of high-speed drilling service to the clutch and crank shaft bearings.

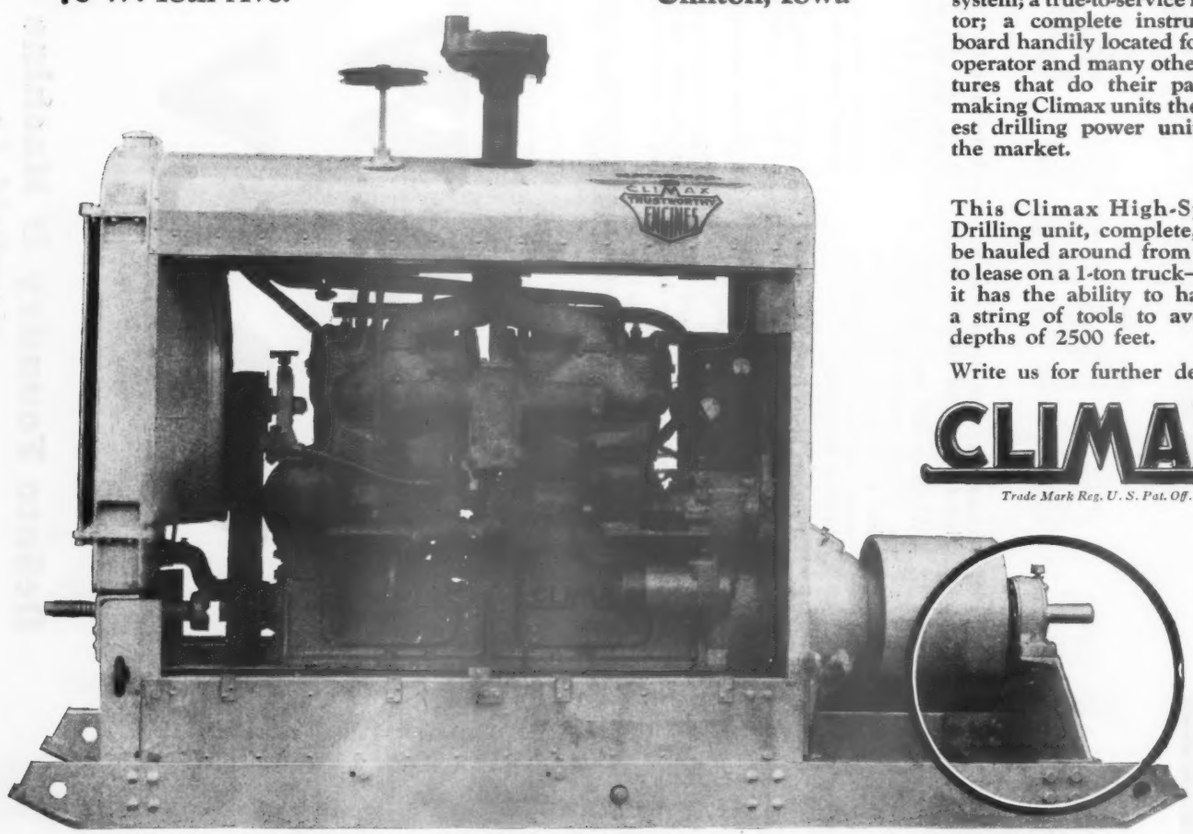
A 4-cylinder engine equipped with telegraphic control; a carburetor that burns gas or gasoline; a double ignition system; a true-to-service radiator; a complete instrument board handily located for the operator and many other features that do their part in making Climax units the fastest drilling power units on the market.

This Climax High-Speed Drilling unit, complete, can be hauled around from lease to lease on a 1-ton truck—and it has the ability to handle a string of tools to average depths of 2500 feet.

Write us for further details.

CLIMAX

Trade Mark Reg. U. S. Pat. Off.



Climax "Paymaster Junior" 4-cylinder High Speed Drilling Unit

DISTRIBUTED BY

THE NATIONAL SUPPLY COMPANIES

NSCO

KANSAS WILDCATS

(Continued from Page 48)

Meridian Gas Co.'s No. 1 Roselle, SW cor. SE Sec. 8-35-1.. Drlg., 2,010 ft.
Otstot et als' No. 1 Volker, NW cor. NE, Sec. 9-35-1.... Rig.
Harris & Hahn's No. 1 Gamble, C NW NW Sec. 17-35-2.. S.D., 1,400 ft.
E. B. Shawver et als' No. 1 Disser, NW cor. NW, Sec. 10-34-3 ..... Drlg., 2,860 ft.
E. B. Shawver's No. 1 Mullett, C NW SE Sec. 31-34-3 .... Drlg., 1,450 ft.
Vickers Pet. Co.'s No. 1 Daniels, NE cor. NW, Sec. 3-30-3. Drlg., 1,640 ft.

DICKINSON COUNTY

Franks & Johnson's No. 1 Schlessner, C SW NE, Sec. 18-16-4 ..... Drlg., 560 ft.
McBride & Goen's No. 1 Shirley, NE cor. SW, Sec. 21-12-4. Dry and abd., 2,469 ft.
Phillips Pet. Co.'s No. 1 Grayler, SE cor. NW, Sec. 11-14-4 ..... Drlg., 1,500 ft.

ELLIS COUNTY

Derby Oil Co.'s No. 1 Weigel, C NW, Sec. 25-2-17w .... Drlg., 1,475 ft.
J. H. Tatlock et als' No. 1 Leiker, NW cor. NE NE, Sec. 26-13-16w ..... Dry and abd., 3,507 ft.

GEARY COUNTY

Pioneer Oil Co.'s No. 1 Chase, SE cor. SE, Sec. 10-12-7.. Drlg., 2,000 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, SE cor. NE SW, Sec. 27-8-25w ..... S.D., 3,460 ft.

GREENWOOD COUNTY

Carnes & Bly's No. 1 Smith, NE cor. SE, Sec. 4-24-13... Dry and abd., 1,801 ft.
Eureka Oil Co.'s No. 1 Brothers, SE cor. NW, Sec. 35-23-11 ..... Drlg., 2,489 ft.
C. A. Devine's No. 1 Bradford, SW cor. NE Sec. 22-26-11. S.D., 600 ft.
Hanley et als' No. 1 Peterson, NW cor. NE SE, Sec. 4-26-13 ..... Spudded and S.D.
C. E. Hawk's No. 1 Lessman, SE cor. SW Sec. 14-21-10.. Dry and abd., 2,197 ft. completed
R. H. Hood et als' No. 1 Butler, C SE SE Sec. 15-26-11.. Drlg., 650 ft.
T. C. Johnson's No. 1 Knox, NE cor. NW, Sec. 8-23-13... S.D., 1,705 ft.
Kismet Oil Co.'s No. 1 Richardson, SW cor. NE SW, Sec. 26-22-11 ..... Location.
Mid-Kansas O. & G. Co.'s No. 1 Hoover, NE cor. SE, Sec. 15-27-13 ..... Drlg., 200 ft.
Rockhill et als' No. 1 Jones, SW cor. NE, Sec. 21-26-13.. Rig.
Sharpless et als' No. 1 Corper, SW cor. SE SE, Sec. 22-23-12 ..... S.D., 1,310 ft.
Smith & Rockhill's No. 1 McDair, NW cor. SE Sec. 20-26-12 ..... Dry and abd., 1,908 ft.

HARPER COUNTY

Amerada Pet. Corp.'s No. 1 Mendiville, C SE SE, Sec. 24-34-6w ..... Drlg., 4,910 ft; crooked hole.
Sam Jarvis' No. 1 Wyckoff, SW cor. NW Sec. 11-34-4w.. Drlg., 4,570 ft; flat hole; will shoot to straighten.
Sam Jarvis' No. 1 Warneke, SE cor. SW Sec. 4-34-3w... S.D., 4,207 ft.

HARVEY COUNTY

Roxana Pet. Corp.'s No. 1 Haury, NE cor. SW SE Sec. 11-23-2w ..... Rig.

JEFFERSON COUNTY

Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 ..... Rigged up and S.D.

KINGMAN COUNTY

James Madison's No. 1 Ballein, SW cor. NW NW Sec. 21-28-5 ..... Drlg., 3,610 ft.

LANE COUNTY

Robinson et als' No. 1 Dickerson, SW cor. NW SE Sec. 11-18-27w ..... S.D., 2,625 ft.

LOGAN COUNTY

W. H. Koons' trus., No. 1 Edwards, NW cor. NW, Sec. 14-14-33w ..... Corrected to 3,855 ft; dry and abd.

MARION COUNTY

Anderson Bros.' No. 1 Benth, SE cor. SW SW Sec. 31-18-5. Dry and abd., 2,620 ft.
Franks et als' No. 1 Wright, SW cor. NW NW Sec. 9-14-4. Rig.
Givens et als' No. 1 Ucker, SW cor. NE, Sec. 31-17-4.... U.R., 1,820 ft.
Graham Bros.' No. 1 Nelson, NE cor. SE, Sec. 30-17-5... Sand, 2,295-2,380 ft; pumping 30 bbls; completed.
T. C. Johnson's No. 1 Thompson, SW cor. NE, Sec. 26-17-4 ..... Chat, 2,329-41 ft; fish. csg.
Raymond Gear's No. 1 Larson, NW cor. SW NW Sec. 18-21-4 ..... Spudded.
Sun Ray Oil Co.'s No. 1 Lehrman, SW cor. NE SE Sec. 1-21-4 ..... Drlg., 3,280 ft.
Shearer & Reardon's No. 1 Strouse, SW cor. NW NE, Sec. 14-18-4 ..... Rig.

MEADE COUNTY

Blackwell O. & G. Co.'s No. 1 Beyer, SE cor. NW SE, Sec. 9-33-28w ..... Drlg., 3,410 ft.

MITCHELL COUNTY

Ben Gurley et als' No. 1 Crombil, C NE NE, Sec. 32-9-7w ..... Rig.

MORRIS COUNTY

Cress & Hawley's No. 1 Grendler, NW cor. SE Sec. 16-15-5 ..... Fish. tools, 1,400 ft.
Hugh Faulder's No. 1 Wendt, SW cor. SE SE, Sec. 18-15-5 ..... Rig and tools.
Fisher & Louck's No. 1 Stroda, NW cor SE, Sec. 6-16-5.. Dry and abd., 2,659 ft.
Franks & Farrell's No. 1 Wendland, SW cor. SE NE, Sec. 20-16-5 ..... Drlg., 1,773 ft.
Graham Bros.' No. 1 Nelson, NE cor. SE Sec. 30-17-5 .. Drlg., 1,420 ft.
Matthews et als' No. 1 Walters, SW cor. NE Sec. 14-15-5. Drlg., 720 ft.
Metz & Nelson's No. 1 Smith, SW cor. SW Sec. 18-16-5.. Rig.
Skelton et al's No. 1 Iles, NW cor. NW Sec. 25-16-5 .... Rig.

McPHERSON COUNTY

Phillips Pet. Co.'s No. 1 Wright, SW cor. NW NW, Sec. 9-19-4 ..... Drlg., 500 ft.
D. I. Hall's No. 1 Gray, NW cor. SE NW, Sec. 20-20-3w.. Spudded and S.D.
John Heron's No. 1 Vosshell, NE cor. NE Sec. 9-21-3w.. Spudded.
C. W. Lamer's No. 1 Lamer, SE cor. SW, Sec. 1-17-3w.. U.R., 3,495 ft.
Gurley & Lamer's No. 1 Paulsen, SE cor. NW, Sec. 6-19-2w ..... Drlg., 1,815 ft.
The Texas Co.'s No. 2 Chinberg, NE cor. NE NW Sec. 32-18-2w ..... Sand, 2,343-77 ft; swbd. 25 bbls.
Danciger Oil Co.'s No. 1 Willem, NW cor. SE SE, Sec. 6-22-4w ..... Rig abd.

OSBORNE COUNTY

Prather-Davis-Krueger's No. 1 Pruter, SW cor. SE Sec. 30-9-15w ..... S.D., 2,360 ft.

PAWNEE COUNTY

Frank Hopper et als' No. 1 Seifers, NW cor. SW NE, Sec. 23-21-11w ..... S.D., 4,170 ft.
F. C. Troupe's No. 1 Lovett, CEL NE NE, Sec. 3121-16w S.D., 1,700 ft.

POTTAWATOMIE COUNTY

J. J. Crawford's No. 1 College, CWL SW NE Sec. 11-10-12. S.D., 2,250 ft.

RENO COUNTY

Danciger O. & R. Co.'s No. 1 Williams, NW cor. SE SE, Sec. 6-22-4w ..... Moved in tools.
Stearns-Streater & Marshall's No. 1 Crabb, SE cor. SW NE, Sec. 1-25-8w ..... Rig abd.

RICE COUNTY

Allison & Fitzwilliams' No. 1 Poland, NE cor. SW NE, Sec. 36-19-8w ..... Cellar.

RILEY COUNTY

Mutual Oil Co.'s No. 1 Marks, SE cor. NE NW, Sec. 26-10-6 ..... S.D., 2,400 ft.

ROOKS COUNTY

J. C. Findeiss' No. 1 Catudal, NW cor. SE SE, Sec. 23-10-19w ..... Rig.
Keys Pet. Co.'s No. 1 Rathburn, NE cor. SW, Sec. 14-9-16w ..... S.D., 3,030 ft.
Krueger et als' No. 1 Poore, NE cor. NE, Sec. 14-8-16w.. Spudded and S.D.
Stearns & Streather's No. 1 Matheson, NE cor. SE NW, Sec. 28-10-16w ..... Drlg., 3,462 ft.

RUSH COUNTY

Valerious & Chenney's No. 1 Sheverman, NW cor. SE NW, Sec. 27-17-17w ..... Spudded and S.D.

RUSSELL COUNTY

Douglas Oil Co.'s No. 1 Stoppel, SE cor. SW NE, Sec. 25-14-11w ..... Rig.

SALINE COUNTY

Mente O. & G. Co.'s No. 1 Muir, SW cor. SW, Sec. 17-15-2w ..... U.R., 3,205 ft.

SEDGWICK COUNTY

Bu-Vi-Bar Pet. Co.'s No. 1 Wright, SE NE SE, Sec. 12-26-1w ..... Drlg., 450 ft.

SEWARD COUNTY

T. B. Slick's No. 1 Pyle, NE cor. NE, Sec. 14-33-33w .... S.D., 3,200 ft.

SHERMAN COUNTY

A. L. Henson et als' No. 1 Murry, NE cor. SE NW, Sec. 22-7-4w ..... S.D., 2,650 ft.

OCS

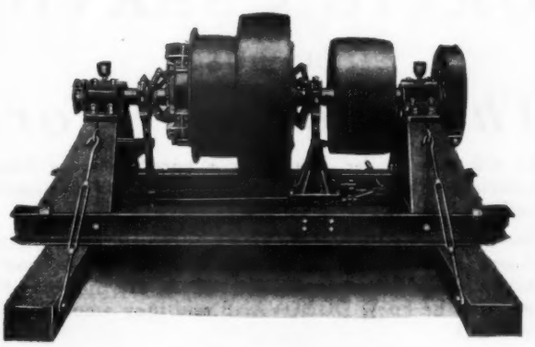
CLEANOUT REELS

or

BAILING MACHINES

LIGHT FOR PORTABILITY
RUGGED FOR HARD WORK

MOVE SAND LINES ON THE REEL AND SAVE TIME AND WIRE



CHAIN DRIVE TIMKEN BEARINGS
USE ON WALK OR DERRICK FLOOR

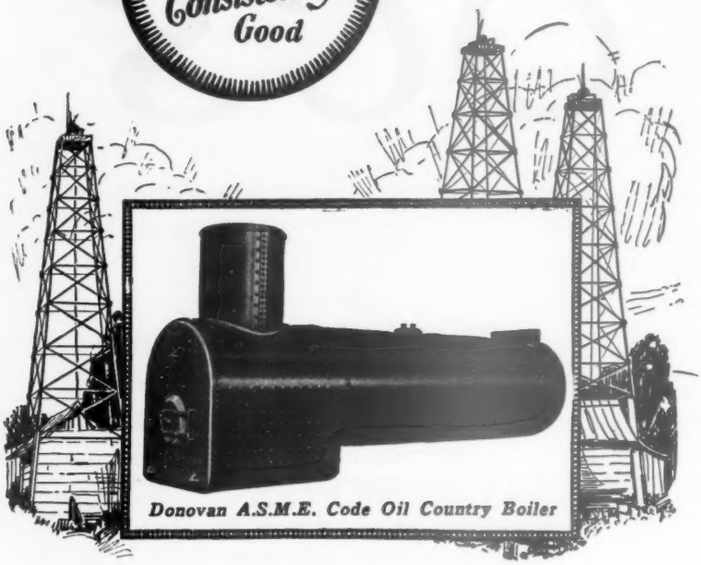
BULLETIN BM ON REQUEST

Manufactured by

THE OIL COUNTRY SPECIALTIES MFG. CO.

Coffeyville, Kansas

Donovan Boilers are Consistently Good



Donovan A.S.M.E. Code Oil Country Boiler

The Logical Choice for

FOREIGN SERVICE

because

They Do The Work

An old time driller, home for a vacation from South America, called on us to express his opinion and appreciation of DONOVAN boilers.

Operating conditions there were extremely bad. Boilers of another make could not deliver to the driller's satisfaction so he asked for DONOVANS. He told his officers that he knew DONOVANS and they would do the job right.

Finally, the DONOVANS arrived and went to work. They lived up to their reputation and the driller's expectations and he had the pleasure of saying "I told you so."

If you want real boilers, gluttons for hard work—you want DONOVANS!

Manufactured by

DONOVAN BOILER WORKS, INC.

PARKERSBURG, W. VA.

NEW YORK OFFICE—30 Church Street

FRICK-REID SUPPLY COMPANY

Mid-Continent Distributors

GREAT NORTHERN TOOL & SUPPLY CO.

MIDLAND IRON WORKS

Montana Distributors

All Leading Supply Houses Throughout the Eastern Fields Handle

DONOVAN QUALITY PRODUCTS

NONE BETTER

SMITH COUNTY

Smith & Buchner's No. 1 Rice, SW cor. SW, Sec. 18-5-15w ..... Rig.

STRATFORD COUNTY

Randall-Johnson's No. 1 Richardson, NW cor. SW, Sec. 24-22-11w ..... Spudded and abd.

Kismet Oil Co.'s No. 1 Richards, SW cor. NE SW, Sec. 24-22-11w ..... Location abd.

SUMNER COUNTY

Helmerich & Payne's No. 1 Broadhurst, SE cor. NE NE, Sec. 15-33-2e ..... Timbers.

Otstot et als' No. 1 Barlow, SE cor. SE, Sec. 22-23-3w ..... S.D., 1,860 ft.

Gypsy Oil Co.'s No. 1 Douglas, NE cor. SE NW, Sec. 23-34-2w ..... Top Wilcox, 4,493 ft; T.D., 4,500 ft; estimated 200 bbls; S.D.

TREGO COUNTY

Central Commercial Oil Co.'s No. 1 Ellis, NE cor. SW NE, Sec. 20-13-21w ..... Spudded and S.D.

WABAUNSEE COUNTY

Empire G. & F. Co.'s No. 1 Schuaem, SE cor. SE, Sec. 19-12-11 ..... Fish., 3,320 ft.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 46)

Galt Brown Oil Co.'s No. 1 Burrow, NW cor. NE Sec. 14-4-9 ..... Drilling 1,772 ft.

OKLAHOMA COUNTY

Cromwell Oil & Gas Co.'s No. 1 Proc or, C SE Sec. 21-14-3w ..... Shut down 4,075 ft.

Slick & Bailey s No. 1 Koester, C SE NE Sec. 18-13-3w ..... Cleaning out 3,800 ft.

Cromwell & Franklin's No. 1 Thompson, SW cor. NE NE Sec. 15-12-3w ..... Fishing 4-inch liner, 6,840 ft.

Cromwell & Franklin's No. 1 Gross, SW cor. NE SW Sec. 22-10-2w ..... Shut down 4,702 ft.

CREEK COUNTY

Lima O. & G. Co.'s No. 1 Grayson, NW cor. NE NE, Sec. 11-14-7 ..... Dry and abandoned, total depth 4,020 ft.

CANADIAN COUNTY

T. B. Slick and others' No. 1 Pazowrech, NW SE Sec. 29-13-5w ..... Hole full of water 4,338-4,452 ft.; shut down 4,580 ft.

Ramsey Brothers' No. 1 Newman, CSL NE Sec. 9-11-7w ..... Drilling 4,625 ft.

LINCOLN COUNTY

Bu-Vi-Bar Petroleum Co.'s No. 1 School Land, C NE SE Sec. 16-13-4 ..... Shut down 4,500 ft.

OKFUSKEE COUNTY

Prairie Oil & Gas Co.'s No. 1 Gray, SW cor. SW Sec. 19-11-7 ..... Dry and abandoned 4,835 ft.

Moose & Daniels' No. 1 Stidham, SW cor. NW Sec. 4-11-10 ..... Shut down 622 ft.

SEQUOYAH COUNTY

Citizens Gas Co.'s No. 1 Johnson, NE SW NE Sec. 33-12-7 ..... Drilling 1,200 ft.

Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-23 ..... Spudded and shut down.

Western Natural Gas Co.'s No. 1 Green, SW cor. SE Sec. 17-11-17 ..... Spudded.

POTTAWATOMIE COUNTY

Shaffer-Kilgore-Sykes' No. 1 Ives, C SE SE Sec. 12-10-3 ..... Drilling by tools 5,327 ft.

Prairie Oil & Gas Co.'s No. 1 Lumbley, SW NW SE Sec. 1-10-5 ..... Dry and abandoned 4,780 ft.

Central Commercial Oil Co.'s No. 1 McCrain, NW cor. NE SW Sec. 16-10-5 ..... Dry and abandoned 4,791 ft.

Superior Oil Co.'s No. 1 Herminghausen, SW cor. NW NE Sec. 24-8-2 ..... Drilling past tools 4,365 ft.

Davy & Detrick's No. 1 McGehee, SW SE NW Sec. 10-6-2 ..... Fishing 4,998 ft.

Amerada Pet. Corp.'s No. 1 Gravel, SW SE NE Sec. 1-8-4 ..... Wilcox sand 4,479-85; hole full of water; drilling.

T. B. Slick & Roxana Pet. Corp.'s No. 1 Hurst, SE cor. NW NW Sec. 17-7-2 ..... Moving in tools.

CADDO COUNTY

Magnolia Petroleum Co.'s No. 1 Shelby, SW cor. SW Sec. 28-10-12w ..... Drilling 2,570 ft.

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w ..... Shut down 150 ft.

W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.

English Drilling Co.'s No. 2 Pruitt, CNL NW SE Sec. 22-6-10w ..... Rigging up rotary.

OSAGE COUNTY

Prairie Oil & Gas Co.'s No. 1, SE cor. NE Sec. 11-24-6 ..... Sand 2,694-97 ft., pumping 15 bbls., completed.

Devonian Oil Co.'s No. 1, NW cor. SE Sec. 18-22-8 ..... Shut down 3,115 ft.

SEMINOLE COUNTY

T. B. Slick's No. 1 School Land, SE cor. SE Sec. 16-6-5 ..... Drilling 2,250 ft.

Roxana and Barnsdall's No. 1 Stidham, NW cor. NE Sec. 6-10-7 ..... Location.

Prairie Oil & Gas Co.'s No. 1 Davis, NE SE Sec. 21-10-7 ..... Rig.

Prairie Oil & Gas Co.'s No. 1 Varnum, NW cor. SW SW Sec. 5-9-6 ..... Wilcox sand 4,441-42 ft., water, plugging back to Hunton lime.

The Texas Company's No. 1 Reed, SW cor. SW Sec. 12-8-5 ..... Wilcox sand 4,720 ft.; hole full of water; dry and abandoned; running tubing to pump.

Twin State Oil Co.'s No. 1 Walker, NE cor. NE Sec. 5-7-6 ..... Rig on ground.

Simon & Bean's No. 1 Palmer, SE cor. NW NE Sec. 7-7-6 ..... Rigged up and shut down.

Barnsdall Oil Co.'s No. 1 Guinn, SW cor. SW Sec. 18-7-5 ..... Drilling 1,395 ft.

Indian Terr. Ill. Oil Co.'s No. 1 White, NE cor. NE SW Sec. 21-7-5 ..... Drilling 3,125 ft.

Reiter-Foster Oil Co.'s No. 1 Coat, SW cor. NW SW Sec. 14-7-6 ..... Spudding.

Indian Territory Illuminating Oil Co.'s No. 1 Marshall, NW NW SW Sec. 32-7-7 ..... Wilcox sand 4,810-20 ft.; dry and abandoned.

Magnolia Petroleum Co.'s No. 1 Vierson, SE SE NW Sec. 5-6-7 ..... Drilling 4,386 ft.

Gardner Petroleum Co.'s No. 1 Unknown, NW cor. SE Sec. 36-6-7 ..... Dry and abandoned 3,008 ft.

Fuhrman Petroleum Co. and Superior Oil Co.'s No. 1 Davis, SW SW SE Sec. 3-10-6 ..... Location.

C. W. Whitney's No. 1 Harjo, NE cor. NW NE Sec. 25-7-6 ..... Drilling 480 ft.

Blackwell Oil & Gas Co.'s No. 1 Mitchell, SE cor. NE SW Sec. 6-10-7 ..... Drilling 1,140 ft.

E. W. Whitney's No. 1 Harjo, NE cor. NW NE Sec. 25-7-6 ..... Drilling 2,620 ft.

Shaffer Oil & Ref. Co.'s No. 1 Catchochee, SW cor. SW NE Sec. 18-10-7 ..... Rig.

Sands Pe. Co. and others' No. 1 Harrison, SW cor. SW SE Sec. 4-7-7 ..... Rig.

Tidal Oil Co.'s No. 1 Foster, SW cor. SE SE Sec. 7-7-7 ..... Drilling 1,000 ft.

Roxana Pet. Corp.'s No. 1 Johnson, NE cor. SE NE Sec. 20-6-5 ..... Location.

DEWEY COUNTY

Huckaby & McCoy's No. 1 Perfect, NE cor. NE Sec. 9-18-15w ..... Shut down 3,370 ft.

BECKHAM COUNTY

C. & H. Petroleum Co.'s No. 1 Barnes, SW cor. NW NE Sec. 32-9-22w ..... Shut down 3,800 ft.

ATOKA COUNTY

G. S. Cochran's No. 1 Hampton, NW cor. NW Sec. 21-1-14 ..... Rig.

Pferffel and others' No. 1-A Carter, NE cor. NE Sec. 35-9-22w ..... Shut down 300 ft.

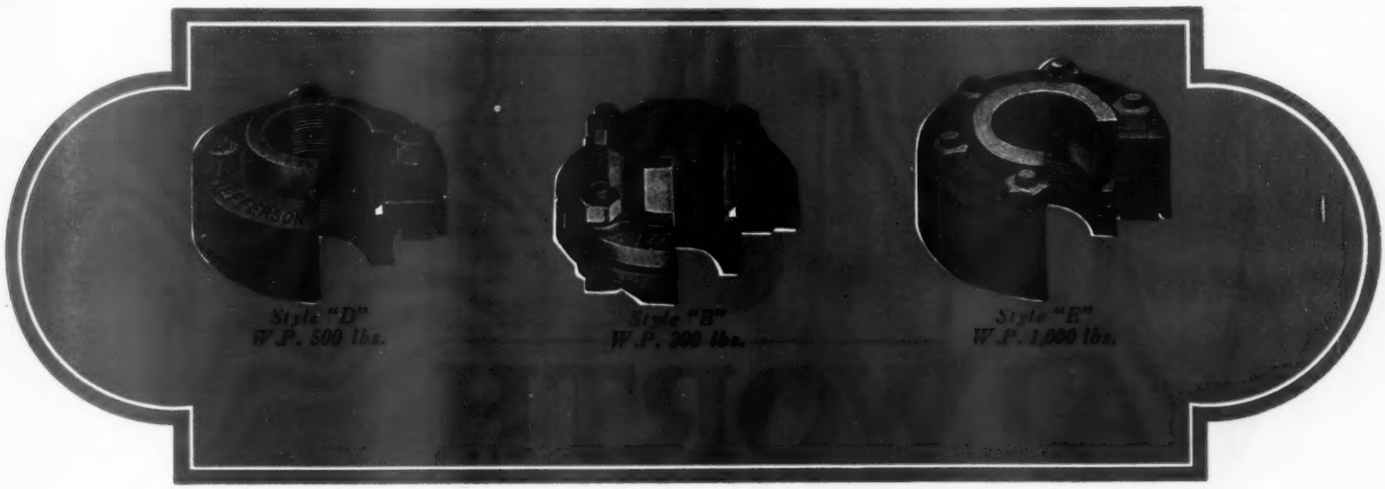
GRADY COUNTY

Clark & Cowden's No. 1 Freed, NE cor. SW SW Sec. 23-5-7w ..... Rig.

Remington and others' No. 1 Fryrear, SW SW NE Sec. 13-9-5w ..... Shut down 720 ft.; may start soon.

Bedner and others' No. 1 Willis, C SW NW Sec. 13-7-5w ..... Shut down 2,450 ft.

Nichlos & Page's No. 1 Drake, SE NE SE Sec. 7-5-7w ..... Shut down 2,307 ft.



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Wirt Franklin Petroleum Co.'s No. 1 Garden, SE cor. SW NE Sec. 1-4-7w ..... Sand 2,003-12 ft.; 1,000,000 ft. gas.
Commercial Development Co.'s No. 1 Chrisman, C NE NE Sec. 21-4-7w ..... Drilling 1,200 ft.
Magnolia Petroleum Co.'s No. 1 Pursley, SE SW NW Sec. 8-4-6w ..... Dry and abandoned 3,905 ft.
Simpson & Feil's No. 1 Long, SW cor. SE SE Sec. 36-5-7w ..... Rig.
Galt Brown Oil Co.'s No. 1 Burrey, C NW NE Sec. 14-4-9. Drilling 1,200 ft.

M'INTOSH COUNTY

Marione Oil Co.'s No. 1 Sanders, NW cor. NE SW Sec. 10-9-18 ..... Shut down 2,250 ft.

CLEVELAND COUNTY

Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w ..... Sand 2,784-2,768 ft., dry; shut down 2,975 ft.

KIOWA COUNTY

Blue Mountain Oil Co.'s No. 1 Jones, SE cor. NW NW Sec. 17-5-14w ..... Drilling 525 ft.
Gould and others' No. 1 Patton, NW cor. SW SE Sec. 17-5-14w ..... Dry and abandoned 380 ft.
Johnson & McDowell's No. 1 Thompson, SW cor. NE Sec. 6-6-15w ..... Drilling 420 ft.
Dave Malernec's No. 1 Van Kirk, NW cor. NW Sec. 35-7-15w ..... Casing 490 ft.
A. C. Varner and others' No. 1 Bonham, CSL NW NW Sec. 5-6-18w ..... Shut down 1,127 ft.

PONTOTOC COUNTY

Gillespie & Gant's No. 1 Taylor, SW SW SE Sec. 13-5-4.. Sand 2,818-52 ft., water; plugged back 2,570 ft., shot 30 and 20 quarts; swabbed 29 bbls.; shut down.
T. B. Slick's No. 1 Barnett, NE SE NW, Sec. 13-5-6..... Underreaming 3,918 ft.
Mid-Continent Petroleum Corp.'s No. 1 Harjo, SE NE NE Sec. 14-5-7 ..... Sand 2,618-22 ft.; 10,000,000 ft. of gas.
T. B. Whitney and others' No. 1 Moore, SW cor. SE Sec. 17-5-9 ..... Shut down 2,654 ft.
Winkler and others' No. 1 Timer, C SW SE Sec. 31-5-9... Shut down 2,761 ft.
R. F. Garland's No. 1 Strickland, SW NW SW Sec. 10-4-3 ..... Shut down 2,650 ft.
Marland Oil Co.'s No. 1 Lawrence, C SW SE Sec. 10-4-4.. Dry and abandoned 2,196 ft.
C. J. Shervin and others' No. 1 Wright, NW NE NE Sec. 13-4-6 ..... Underreaming casing 2,020 ft.
Boles and others' No. 1 Rayburn, SW SE Sec. 35-4-6..... Shut down 1,340 ft.
Texas-Pacific Coal & Oil Co.'s No. 1 Stewart, C SW NE Sec. 11-5-8 ..... Repairing rig 2,314 ft.
Henry and others' No. 1 Gregg, SW SE NW Sec. 14-4-7.. Shut down 1,090 ft.
Oklahoma Portland Cement Co.'s No. 1 Mathews, C SW NW Sec. 24-4-7 ..... Drilling 1,790 ft.

GARVIN COUNTY

Dixie Oil Co.'s No. 1 Perkins, SE NW Sec. 15-4-1 ..... Drilling 5,220 ft.
Magnolia Petroleum Co.'s No. 1 Vaughn, NW SW NW Sec. 12-3-1 ..... Drilling 5,434 ft.
Heath & Bauman's No. 1 Hattell, SW SE SW Sec. 10-3-3 ..... Shut down 1,640 ft.

COMANCHE COUNTY

Jolly-Ogg Oil Co.'s No. 1 Neeley, SE NE Sec. 24-3-10w... Drilling 2,370 ft.
Ashcraft and others' No. 1 School Land, SE cor. SE Sec. 20-2-10w ..... Broken sandy lime 822-954 ft.; swabbed 3 bbls.; total depth 975 ft.; shut down; material moved out.
Jenkins and others' No. 1 Smith, SW cor. SE SE Sec. 34-1-10w ..... Shut down 1,530 ft.
Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w.. Reaming pipe 3,315 ft.

COAL COUNTY

McGraw and others' No. 1 Patton, SW SE NE Sec. 35-1-8 ..... Drilling 1,138 ft.
Indian Territory Illuminating Oil Co.'s No. 1 Harris, SW cor. NW Sec. 10-1-11 ..... Will shoot to try and clean hole; total depth 1,725 ft.

OKLAHOMA PANHANDLE
CIMARRON COUNTY

Phillips and others' No. 1 Unknown, NW cor. NW Sec. 24-6-2 ..... Shut down 4,340 ft.
Sinclair Oil & Gas Co.'s No. 1 School Land, NW cor. NW Sec. 22-5-2 ..... 4,872 ft., will plug.
Ramsey Brothers' No. 1 School Land, NE SW SW Sec. 21-5-5 ..... Drilling 3,755 ft.
Ramsey Brothers' No. 1 Unknown, NW NE Sec. 27-5-5... Shu down 4,100 ft.
Ramsey Brothers' No. 1 School Land, SE SE Sec. 34-4-1.. Drilling 3,850 ft.
Gladys-Belle Oil Co.'s No. 1 Iserial, SW NE Sec. 25-3-7... Plugging 4,392 ft.
Valerius & Wilkinson's No. 1 Unknown, SE cor. NE Sec. 25-3-7 ..... Drilling 2,545 ft.
H. F. Wilcox Oil & Gas Co.'s No. 1 Zea, NE SW Sec. 28-3-13 ..... Shut down 3,765 ft.
Skaer and others' No. 1 Mathis, SW NE NE Sec. 17-3-23.. Drilling 3,227 ft.
Ross Fenton and others' No. 1 Graves, NE NE Sec. 2-2-9.. Spudded and shut down

TEXAS COUNTY

Danner Oil Co.'s No. 1 Graves, NE cor. SW SW Sec. 23-2-18 ..... Shut down 700 ft.
Newsom and others' No. 1 Allison, SE Sec. 4-1-12 .... Shut down 4,040 ft.
Dotton and others' No. 1 Baker, C NW Sec. 4-1-13..... Rig blown down.
H. & H. Oil Co.'s No. 1 Hitch, NE cor. NE Sec. 26-1-15... Shut down 600 ft.
Three Way Oil Co.'s No. 1 Cane, SW NW Sec. 11-1-18... Hole full of water at 3,318-58 ft.; shut down.
Conley and others' No. 1 Unknown, SE cor. NW Sec. 5-1-19 ..... Spudded and shut down.
Texas County Gas Co.'s No. 1 Bacon, C NE NE Sec. 17-3-16 ..... 10,000,000 ft. gas 2,606-42 ft.

SOUTHERN OKLAHOMA
BRYAN COUNTY

Green Oil & Ref. Co.'s No. 1 Kemp, SE cor. NW NW Sec. 28-8s-9 ..... Shut down 600 ft.
Alexander & Oppenheimer's No. 1 Hampton, SE cor. NE Sec. 26-7s-11 ..... Shut down 1,425 ft.

JEFFERSON COUNTY

J. R. McCoy and others' No. 1 Smith, SE cor. NW Sec. 14-7s-6w ..... Rigged up and shut down
W. Bassett's No. 1 Johnson, NE NW Sec. 15-6-8w ..... Location.
Amerada Petroleum Co.'s No. 1 Emerson, NW cor. SE SW Sec. 28-5s-8w ..... Drilling 960 ft.
Wirt Franklin Petroleum Co.'s No. 1 Foster, CNL NW SW Sec. 35-4S-4e ..... Spudded.

CHOCTAW COUNTY

Hugo Gay's No. 1 Smith, SE cor. SW NW Sec. 27-6s-16... Shut down 1,540 ft.
Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19 ..... Shut down 1,346 ft.

TILLMAN COUNTY

Bray and others' No. 1 Barker, NE cor. SW NW Sec. 9-1-15w ..... Drilling 650 ft.
A. N. Pearson's No. 1 Mounts, SW cor. SW Sec. 3-5s-15w.. Rig.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-16w ..... Drilling 2,540 ft.

MARSHALL COUNTY

Laurel Oil & Gas Co.'s No. 1 Chastine, SE NW Sec. 26-4s-5 ..... Dry and abandoned 4,190 ft.
Magnolia Petroleum Co.'s No. 2 Marshall, SW cor. NW SW Sec. 26-5s-7 ..... Dry and abandoned 730 ft.
Alter and others' No. 1 Brown, NE cor. NW NW Sec. 11-4-6 ..... Dry and abandoned 201 ft.

STEPHENS COUNTY

Pierce & Brown's No. 1 Garland, SE NW NE Sec. 34-2s-6w ..... Shut down 1,700 ft.
Ward, Martin & Smythe's No. 1 Vestal, NE cor. SE Sec. 7-3-7w ..... Rig.
Geo. Pace and others' No. 1 Absher, NW cor. NW Sec. 7-3s-7w ..... Rig.

JOHNSTON COUNTY

McPherson and others' No. 1 Wyand, CSL NE NW Sec. 7-2s-9 ..... Shut down 4,440 ft.
Wapanucka Oil Co.'s No. 1 Banks, Sec. 28-2c-9 ..... Shut down 1,530 ft.

CARTER COUNTY

Grooms and others No. 1 Morris, CSL NW NE Sec. 19-1s-2w ..... Shut down 3,463 ft.

MURRAY COUNTY

Thompson Oil Co.'s No. 1 Freeman, SE cor. Sec. 27-1s-2... Rig.
Glicrease Oil Co.'s No. 1 Wolf, SE cor. NE Sec. 20-1-2... Drilling 1,600 ft.
Revels & Magee's No. 1 Labor, NW cor. NW Sec. 17-1-2... Shut down 240 ft.
Alter and others' No. 1 Johnson, SW cor. NW Sec. 14-4-7.. Spudded.

LATTIMER COUNTY

Limestone Oil & Gas Co.'s No. 1 McMurray SW cor. SW Sec. 15-5-18 ..... Shut down 1,700 ft.

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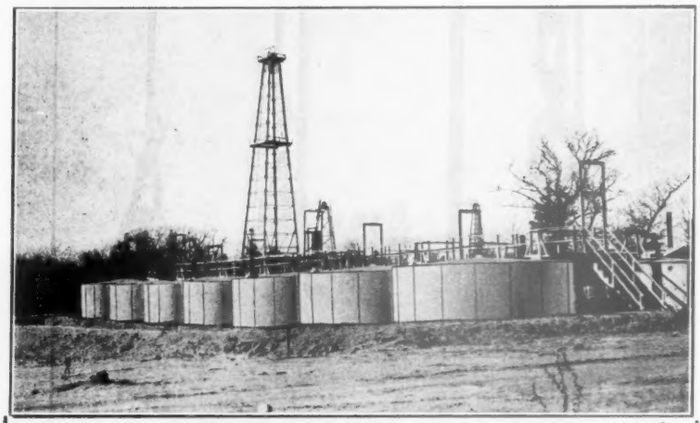

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MALONEY ALONE

POSSIBILITIES OF PETROLEUM IN THE UINTA BASIN DISTRICT

By Earl Douglass

The area here considered is the southern portion of a great intermountain basin. It is east of the southern part of the Wasatch range and south of the Uinta uplift. The latter not only includes the Uinta Mountains, as usually understood, but the continuation of this uplift eastward, in a less prominent swell to the main uplift of the Rocky Mountains, which is the eastern terminus of the basin. It occupies portions of northeastern Utah and northwestern Colorado.

It is both a structural and a topographical basin, though the latter does not extend as far south as the former. The southern border of the topographic basin—the Uinta Basin proper—is sharply defined by a long, sinuous line of steep, southward-facing escarpments about 250 miles in length east and west.

The Uinta Basin, as commonly understood, is about 240 miles in length and an average of approximately 80 miles north and south, though in one place near the western portion it is about 120 miles in this direction. The area is about 20,000 square miles. The structural basin has an area of something like 30,000 square miles. The bigger intermountain depression has an area of approximately 65,000 square miles.

Geological Formations

In the Uinta Basin, including the mountain heights, sedimentary formations of nearly all of the great geological ages are represented. In the greater portion of the region they lie in almost unbroken succession, though in some places in and near the mountains there are decided unconformities.

The formations represented here which have been found to be oil bearing here and in related formations elsewhere are the Mississippian, Pennsylvanian, Permian, Upper Jurassic, Comanchian, Cretaceous (including the Benton and Pierre members) and the Tertiary

The Mississippian is being drilled in the southeastern portion of Utah.

Oil has been found in the Pennsylvanian in the San Juan Field in Utah and showings are reported in the Moab Field north of the San Juan district.

In the Embar formation, which is Pennsylvanian or Permian, thick, sticky oil has been found by drilling on the southeast slope of the Blue Mountain uplift in Colorado. This is in the area now being considered. Signs of oil are reported in Utah west of this locality. Oil has been discovered in large quantities in the Iles structure in Colorado just within this region. It is in the Sundance formation (Upper Jurassic). Oil and gas have recently been encountered in the Morrison (Comanchian or Lower Cretaceous) in the Iles and Hamilton structures in Colorado. A large amount of gas and some oil have recently been struck in the Morrison (Dinosaur beds) in the Ashley Valley well in Uinta County, Utah.

Rangely Producers

In the Mancos, which includes the Benton, Niobrara and Fort Pierre, there are producing wells in the Rangely Field in western Colorado just east of the Utah-Colorado State line. The oil is in fissures in the shale, sandy shales or fine-grained sandstones, probably in the Pierre division. The Pierre in the Florence Field in Colorado has long been producing oil from fissures. The Hamilton Dome is now yielding oil from the shale. Oil has been found, also, in the Mancos shale in other places in Colorado. It has also been obtained from Cretaceous shales in a syncline west of the Salt Creek anticline in Wyoming.

In the Mesa Verde formation there are extensive beds of coal and dark shale in Colorado. I believe that there are, in places, indications of oil at the outcrops and in coal mines, but I am not able to definitely prove this at present Gas has been struck on the White River Dome on White River, Rio Blanco County, Colorado. This is in the Uinta Basin. Undoubtedly this gas came from the upper portion of what is now called the Mesa Verde but the upper part is a different formation farther west, especially in Utah, therefore it may come under the next formation mentioned. The oil near De Beque, Colorado, in this same structural basin is apparently in this horizon and is probably Tertiary and older than Wasatch.

The greater part of the production in Wyoming is from the Cretaceous.

There is an unnamed or uncorrelated formation which has been included in the Mesa Verde but which is probably Tertiary instead of Cretaceous. It has saturated sandstones and gravels up to 200 or 300 feet in thickness and is shown in outcrops for nearly 200 miles. To distinguish it until it is correlated with its representatives in other regions, I will call it the Asphalt Ridge formation, as it is well exposed in the Asphalt Ridge near Vernal in Uinta County in Utah. At Cedar Butte, in the same county, it unconformably overlies the White Cliff sandstones of Jurassic age and it has saturated them by the oil seeping down into them. It must be extremely petroliferous as it has saturated the more porous of these Jurassic sandstones to a thickness of about 700 feet.

Wasatch Tertiary

In the Wasatch Tertiary, or in the lower member of the Green River (Tertiary) there are springs which deposit asphalt; and in one place, at least, there is a fissure in the sandstone from which gasless paraffin oil issues with a little stream of water. This spring will be mentioned again under lower Green River. At Soldier Summit in Utah are the largest known ozokerite (mineral paraffin) deposits known in the United States. They are in the upper part of the Wasatch clays, or sandy clays and the Lower Green River petroliferous shales outcrop in the country to the north and northeast, but they have been wholly or partly eroded away in the area where the ozokerite has been opened up. It was naturally inferred that that petroleum in leaching into the crevices from the overlying shales was fractionated in some way, perhaps partly by some colloidal process, and the paraffin remained in the crevices while other parts of the oil passed farther down. Mr. Livingstone, the resident proprietor, has just sent me some samples which seem to point in the same direction. The fine samples are wet with a fluid which has the exact odor of kerosene.

The natural fractionating process is very common and is probably going on in nearly all oil fields where migration is at all extensive and this no doubt is responsible, in a great measure, for the fact that there are hardly two crude oils which are just alike.

In Utah there are three members of the Green River (Tertiary) which can be quite definitely separated in the greater part of the area. They are the lower shales, the middle sandstones and the upper shales.

The lower Green River is composed principally of shales with interbedded standstones in most places where I have observed it in Utah, but in Raven Ridge along the Colorado-Utah State line, stratified and massive sandstones predominate. In this there are quite thick beds of sandy shales. The shales are usually several hundreds of feet in thickness and are oil bearing. Some of the bands are saturated and cemented with the residue of petroleum. They are tough and resemble some of the bands of the shales of the Upper Green River.

Oil Spring From Fissure

In the canyon of Whiskey Creek south of Dragon in Utah but near the Colorado-Utah line, there is an oil spring issuing from a fissure in the sandstone which is Upper Wasatch or Lower Green River probably the former. Above the sandstones there are several hundreds of feet

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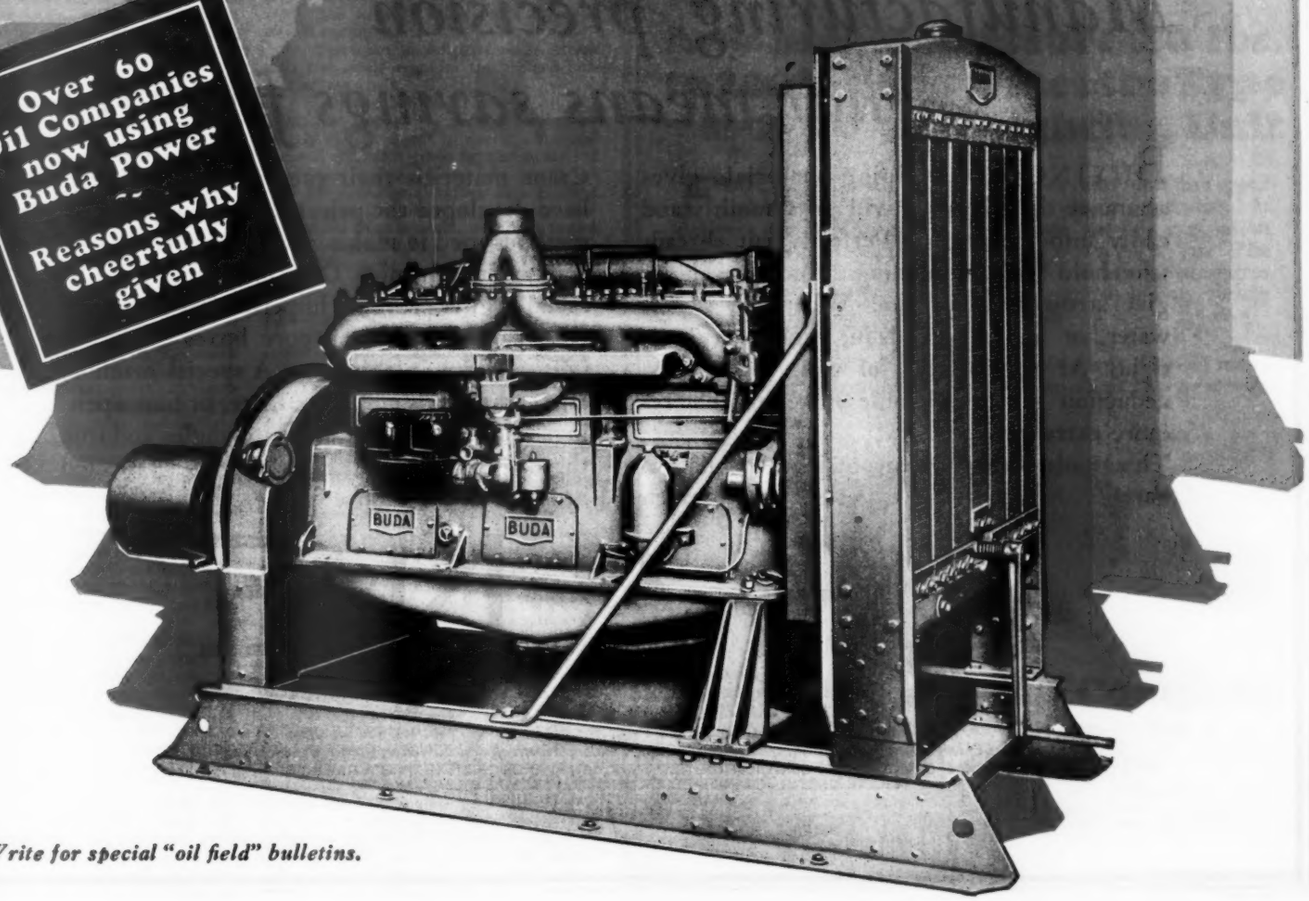

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of oil-bearing shales. These shales are Lower Green River and are undoubtedly the source of the oil. It is inferred that passing through the shales or sands has filtered out the heavier portions of the oil—asphalt, etc.—and in its wanderings underground in fissures the lighter portions have escaped. There are one or more of asphalt-saturated rocks in the beds above. The oil from the spring is a nearly pure paraffin oil and a plant was erected several years ago which separated it into three grades of lubricating oil. To obtain fuel a road was built to a place on the steep bluffs perhaps 200 feet above. The shale was shovelled into wagons and taken to the plant where it was burned and furnished the fuel for retort. On the so-called "Seep Ridge" farther to the westward, near the south rim of the basin, springs issue which deposit asphalt in a way which reminds one of the terraces at the Mammoth Hot Springs in the Yellowstone Park. These are either in the Wasatch or the Lower Green River. Ozokerite (paraffin residue) occurs in this horizon at Soldiers Summit, Utah, on the Denver and Rio Grande Railroad.

The Middle Green River consists of alternate bands of massive sandstone, and dark and gray shales which contain remains of plant and animal life. These are probably, in part at least, oil producers as some of the interbedded sandstones indicate oil in some places.

Upper Green River

The Upper Green River is principally fine, sandy shale. It is undoubtedly the richest shale of so great an extent and thickness that has been discovered. It is 800 feet to 1,500 feet in thickness and has an areal extent of upward of 5,000 square miles in the Uinta Basin. These shales are usually laminated and weathered and split into thin and thick layers. Beyond the weathered areas, as in cuts made for representing work on oil shale claims, the pores of the shales are filled with oil residue which serves as a part of the cementing material. In some of this where this has been weathered or burned out, the shales become weak and some disintegrate. The immense gilsonite veins, at least in the more northern section of the basin, have their roots in these shales in millions of small veins. Some of the larger are in the massive Uinta sandstones and sandy shales of the Uinta. Where these small spaced veins occur in the shale it is quite siliceous and seems to have been partly drained of its oil. Contrary to continually quoted statements the sandstones interbedded with these shales contain oil residue unless too "close" or so porous that the oil could have disappeared from the outcrops.

Structure of the Basin

Two of the controlling features in the structure of the Uinta Basin are the Uinta uplift and the great Uinta syncline. It has been said that the former is the only extensive mountain range with an east-west axis. It is not necessary to consider here the structure on the north side of the mountain range which is the western portion of the uplift. This is part of the large basin on the north. The most prominent complications on the south side of the main axis are the small Split Mountain and Blue Mountain uplifts. As viewed from the south, we could illustrate the structure of the main range as that of a centipede with the legs extending southward and the Blue Mountain as an octopus with the tentacles extending in a southerly direction. These legs and tentacles would represent the branch anticlines or folds extending in this direction.

The other primary structure besides the Uinta uplift is the Uinta trough or syncline. The axis of this syncline extends in a sinuous line near the southern foot of the Uinta Mountains and of the Blue Mountain, from the eastern slope of the Wasatch Mountains to the main Rocky Mountain Range—a distance of about 225 miles.

South of this syncline the general dip is northward; therefore this trough has a steep southern dip on the north side and a gentle rip to the northward on the south side. The southern area is much greater as the dips are only 2 to 5 degrees, as a general rule, and it is 80 to 100 miles wide, while the dips on the north side are as high as 60 degrees and only a few miles to 25 miles in width to the mountain divide.

The cross anticlines or branch swells extend from the mountains southward (not directly south by any means)—undoubtedly across the trough—and appear toward the southern portion of the basin. It is these which have cracked or fissured the strata of the Green River and Uinta deposits, tapped the oil horizons, drained the oil into the fissures and filled them with the now dried and solid hydrocarbons known as gilsonite, wurtzillite, etc.

Continuity of Sands

Usually the principal sandstones, as well as many of the other strata of the Paleozoic and Mesozoic, extend over large areas. This is especially true of the sands of the Dakota and the lower Mesa Verde. This is important as it gives opportunity for the extensive migration of the oil down the slopes, provided that the sands are porous throughout. Of course, these are things to be studied and determined in detail in prospecting for oil here.

Briefly stated, there are the following conditions in the Uinta Basin in Utah and Colorado:

Sources of Oil

1. There is a thickness of about 20,000 feet—a larger maximum aggregate—of sedimentary formations above the base of the Mississippian.

2. In this series there is a thickness of 7,000 feet, or more, of gray to black shales. Of this, 5,000 feet correlatees in time and manner of deposition with the shales which, in Wyoming, Montana and Colorado are supposed—part of them at least—to furnish the greater part of the oil which has been found in these states.

Other bands of shale aggregating 2,000 feet or more in thickness show unmistakable evidence of having been oil-generating shales—at least in part—by the saturated sand and saturated shales themselves. It is the latter which have furnished the oil for the immense veins of solid hydrocarbons which have made this region famous.

3. The area of these rocks is about 20,000 square miles.

4. There are no eruptive rocks except in a few small areas in the eastern portion of the basin.

Structure and Sources

5. The rocks are not crumpled or greatly distorted, yet in nearly all places there is sufficient grade for the movement of oil and water. There are faults but they are exceptional rather than general.

6. As to the migration and accumulation of oil in this basin, only two causes need to be noted in a general consideration. They are:

A. Gravity.

B. The pressure of overlying strata on soft shales, perhaps, forcing the liquids out into less compressible rocks—porous sandstone, for example.

7. Undoubtedly gravity is the principal factor to be considered here; as, when oil or water, or both, have once reached porous rock which is underlain by less porous strata the liquids will be stopped or impeded in their downward movement at the bottom of the more previous strata, if the rocks are lying flat. If the strata dip, the oil and water will work down the dip or slope, providing there is a continuous head, until an obstruction is reached. If there is no other obstruction or trap the liquids will be at the lowest level they are able to reach, which is usually a trough or syncline. It is only when the "domes" and minor anticlines are in the right position in a structural basin that they serve as reservoirs for the oil as commonly understod, though the folding may produce fissures in less pervious strata which serve as reservoirs—for example in the Rangely anticline. As most oils are lighter than water they will be on top of the latter if, in their movements, the oil has been able to work its way to the top. Sometimes there has not been a chance for the separation and the oil and water are mixed.

8. Looking for oil in the basin, then, should begin much on the principle of a

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survey for underground waters. Where the water can go, as a rule, the oil can go, but the oil is lighter. This is the principle that underlies the anticlinal theory of oil accumulation and its special application to only certain conventional types of structure regardless of the general structure of the greater geological unit—a great basin, for example—is extremely misleading, and if followed, would naturally lead away from the oil instead of to it where the structural conditions do not conform to a certain type. It is very evident from a study of these conditions in the Uinta Basin and an observation of the history of the efforts to find oil that this is just what has happened.

9. The strata of the Uinta Basin dip inward from every direction. Therefore, if there were oil it could not get out on an extensive scale and it must still be in the basin. There is nothing which has been ascertained in regard to its geological history that would imply that it had ever been able to get out. All of the evidence so far has been the other way.

10 That there is oil in Paleozoic and Mesozoic strata is inferred from its discovery in similar or like formations elsewhere.

11. It has been so extensively found associated with black shales—and in them—that the supposed requisite of a proper source ought to be satisfied by the 5,000 feet, and more, of these shales in the rocks of the Mesozoic here.

12. In a late Cretaceous or early Tertiary formation the sands are actually saturated with oil residues for a distance of 60 miles or more, indicating that the formation is extremely petroliferous. One shallow well drilled back of the outcrop did strike oil though it was not drilled half as deep as it should have been.

13. In the Green River formation petroliferous shales predominate. At least some of these shales have furnished the oil and the thicker portions have been caught by the shales and sands. Apparently the lighter oils have either evaporated or passed down the grade—probably both.

Migration of Oil

14. On the so-called "anticlinal theory of the accumulation of oil," the migration of the free oil in all the formations which contain it should be toward the Uinta syncline, depending on the porosity or fissuring of the rocks, until the strata take up the liquids by adhesion or the clogging of the pores or a trap is encountered.

15. One mode of the migration of oil is through underground fissures. This can be actually witnessed in one or more places in this region. The cross anticlines which have been mentioned and which can be seen to be extensively fissured in the direction of their axes, extend in the right direction to facilitate the migration of oil toward the trough. Though there are many structures with three-sided dips everywhere, as they plunge toward the syncline, reverse dips—up the general dip—are extremely rare; yet if these did occur it is difficult to see how they could have any influence in stopping the migrating oil except by producing fissured reservoirs. The great problem as to the position of the oil should naturally be—unless there is some other obstruction—how much water is there in the syncline?

16 There are 20 or more sands that have possibilities of oil production, but these are, many of them, separated by nearly impervious strata of sand or clay so that they will probably be found to be more or less independent; that is, if oil is found in a sand in one formation it does not follow that it will be directly below in another sand or formation. In some sands there might be much water in the trough while in others there might be little or none.

17. I have not seen all of the various geological reports on the basin but it is understood that many of them have been adverse. I have never seen any geological report of the whole Uinta Basin. If there had been such a report on the whole basin—its general structure and the oil showings—I do not see how the report could possibly have been unfavorable. If it were "domes" which were sought, with the supposition that they were the only oil structures, then the search would naturally be discouraging for there are few of these indeed. But if the strata are petroliferous and the structure is such that the oil cannot migrate away, and there are no domes, it does not require much reasoning to infer that the oil is in some other type of structure. Here, if the principle of the anticlinal theory is true—and it is, for it is the principle that "liquids seek their level"—the oil should be found in several of the dozen or more structural types in which oil has been found, as noses, monoclines, terraces, synclines, fractures, fault traps, plunging anticlines, porous lenses, etc.

18. There has been some drilling in various portions of the basin, and as yet there is but one productive field, it has been supposed that these have been evidence that the basin was not an encouraging place to prospect, but with the possible exception of the Rangely Field, I think it quite safe to say the proper geological work has not been done previous to drilling, or the holes have not gone deeply enough to make tests of the sands or fractured area which might be petroliferous.

LANDING AND CEMENTING LONG WATER STRINGS

(Continued from Page 112)

is no more difficult or hazardous than the cementing of any water string at a shallow depth. Generally, more cement is used for deep water strings. However, the matter of pressures is taken care of mechanically by heavier displacement fluid. The only difference between shallow and deep jobs is the length of time necessary to get the cement into position. The time required is dependent upon the volume of cement slurry and mud fluid to be pumped. It would take longer to cement a string of 11-inch casing at 4,500 feet than to cement 6¼-inch casing at 6,500 feet, other things being equal. The displacement fluid should be pumped in behind the cement as rapidly as possible. A measured volume equal to 80 or 90 per cent of the total volume to be used can be prepared in advance of the cementing job and be ready for use. All the mud pumps on the job can be put to work putting this mud fluid into the casing, as the pressure will not begin to rise very high until over half the cement has passed around the shoe. The high-pressure pump is then able to finish the job in a reasonable time.

Causes of Failure

There have been a number of failures of shut off on the first cementing job on large size water strings, some of which were too heavy to be raised and lowered in the hole. The percentage of failures increases rapidly on strings of 11-inch or more in diameter. On water strings of 8¼-inch and smaller the percentage of failures is very low. It is recognized that the greater the circumference around which the cement must form a complete jacket and bond with the formation, the harder it is to obtain satisfactory results. The possible causes of failure in the unsuccessful jobs, aside from the difficulty of obtaining a continuous cement jacket around the shoe, are: The casing may not be set in the proper formation; the use of poor cement; improper conditioning of the hole, leaving heavy mud on the walls of the hole, which is subsequently sloughed away, leaving a channel for seepage of water.

One particular instance investigated was a string of 11-inch casing set deeper than 4,500 feet. This casing could not be moved during the cementing operations. It was learned that the time necessary to perform the cementing operation was two hours and five minutes. The cause of the failure could not be determined, but channeling of the cement and the length of time required to get the cement in position may each have been contributing factors. The time consumed in mixing and pumping the cement to place is a vital factor in the results obtained in a cementing job. The quality of the cement is materially im-

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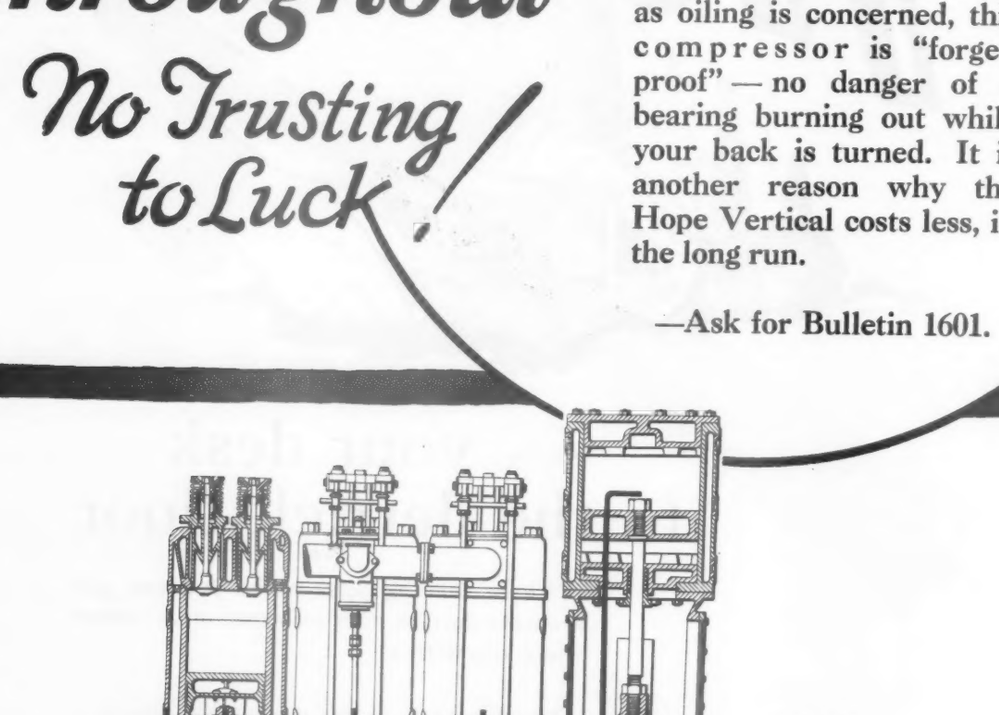

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paired by disturbance after the initial set has commenced.

It is not the best operating practice to attempt to set a string of casing at a depth where, due to its weight, it can not be safely moved in the hole, and, if large casing is used, the depth should also be limited to where the cement can be placed in position in less time than is required for its initial set. Cement is considerably weakened if moved and agitated after the initial set has commenced.

A crooked hole does not affect the cementing operation itself, but may affect the results obtained. Curves in the walls of the hole force the casing from one side to the other as it goes past them, and there are probably points where the casing is in direct contact with the formation, thus preventing any cement bond at that point.

Casing Collapse

The depth at which a string of casing is set is in no way responsible for its collapse. Casing collapses when the external pressure becomes greater than its collapsing strength. This condition is brought about by permitting the fluid level inside a string of casing to become too low. In cases where water strings are set at a depth far below the point to which the inside fluid level can be safely lowered, an additional string of casing should be used to reinforce the water string. These so-called secondary water strings or reinforcement strings should be of such size as to safeguard against collapsing when the fluid level from the producing oil zones reaches the depth of the cementing point of the water string. It should be bonded by cement or suitable mechanical means to the larger water string so that a high fluid level between the primary and secondary water strings may be maintained. In some fields where high gas pressures exist and where the flowing life of a well has extended over a considerable period of time, it has been the experience that the gas pressures drop off very suddenly with a resulting drop in fluid levels. When this occurs a great many collapsed water strings are reported and they are always found in wells where timely precaution to reinforce the deep water strings was not taken.

There is need of research work in connection with the use of cement in the oil fields. Those institutions or organizations that have available funds through the American Petroleum Institute or other sources for investigation and research might aid materially in conservation of oil and gas by having the cementing practice in oil fields made the subject of study.

One point in dispute is the use of chemical accelerator in cement used to cement water strings. The durability of treated cement is questioned. Will such cement be permanently or temporarily efficient in forming an impervious bond to exclude water? What is the longest reasonable time such cement may be relied upon to be efficient? Is such a temporary period sufficiently long to assure adequate protection in an oil field as long as that field could be made productive?

EASTERN FIELDS

(Continued from Page 66)

Co. drilled deeper and through all sands an old well on the A. G. Mace farm. It is dry in all formations and has been abandoned. In Geary district, Roane County, the United Fuel Gas Co. has a gasser in the Big Injun sand at a test on the L. C. Stump farm.

At Petroleum, Grant district, Ritchie County, the Delta Oil Co. has completed in the Mitchell sand a second test on the W. J. Goff farm. It is a duster.

On Magoty Run, Liberty District, Marshall County, the Manufacturers Light & Heat Co. has the rig completed for a test on the E. W. Boerner farm. In Spring Creek district, the Dailey Oil Co. is drilling a test on the S. E. Badgett farm. In McKim district, Pleasants County, S. Powell and others are due in the sand on the First National Bank's property. In Geary district, Roane County, the United Fuel Gas Co. is due in the sand on the Bertha Conterbury farm. In Sheridan district, Calhoun County, B. J. Crowley has completed a rig on the James Bryner farm. In Lee district, the Hope Natural Gas Co. is drilling on the C. D. Stalnaker farm and has a rig upon the Don Altizer farm.

Lincoln County Tests

In Duval district, Lincoln County, J. V. Reishman has started to drill No. 3 on the D. G. Beheler farm. In Carroll district, the Columbia Gas & Electric Co. has started to drill on E. D. Hoskinson farm. It is also drilling on the Sherilda Reynolds farm. In Union distrit, Roy & McComas have shut down on the Randolph Sias farm. In Scott district, Boone County, the Cameron Oil Co. has made four locations on the George P. Anderson farm. Two are now drilling. In Jefferson district, the Russell Gas Co. is bui'ding the rig for a second test on the James Cooper farm.

In Duval district, Lincoln County, C. C. Wolf has rig material at a location on the Malinda Meadows farm. Lusher Brothers have rig material at a location on the G. D. Lusher farm, in McComas district, Cabell County.

In Union district, Ritchie County, the Hope Natural Gas Co. has made locations on the M. J. Wilson and W. M. Wilson farms. In Murphy district, L. C. Huff & Co. got a show of gas in the sa't sand at a test on the J. P. Strickler farm and have shut down for orders. In Center district, Braxton County, McIntosh and others have made locations on the C. F. Engle and D. S. Engle farms. In Center district, J. P. Pauley & Co. have started to drill on the Henry Clowser farm. In Sherman district, Calhoun County, McIntosh & Co. are rigging up on the J. M. Morgan farm.

Spudding In

On Indian Creek, Murphy district, Ritchie County, the South Penn Oil Co. is spudding in a test on the W. B. Morris farm. In Hackers Creek district, Lewis County, the Standard Gas Co. has started to drill a second test on the E. B. Jackson farm. In Carroll district, Lincoln County, the Cambridge Gas Co. is drilling on the S. Reynolds and M. Carpenter farm. In Barboursville district, Cabell County, Dunham & Gitus are drilling on the Winnie Sellards farm. In McComas district, the West Virginia Gas Co. is drilling on the William Childers farm.

In Barboursvil'e district, Cabell County, the West Virginia Gas Corp. is drilling on the W. A. Childers and Mary F. Keyser farm. In the same district the Kentucky Gas Co. is rigging up on the Thomas McAllister farm. Lusher Brothers are building a rig on the G. T. Lusher farm. In Liberty district, Marshall County, the Manufacturers Light & Heat Co. has started to drill on the E. W. Bonar farm. In Geary district, Roane County, the United Carbon Co. has the rig completed and tools at a location on the J. F. Keene farm.

Southwest Pennsylvania

In Whitley Township, Greene County, the Manufacturers Light & Heat Co.'s test on the Lockhart farm is a duster. In Greene Township, Orndoff & Co.'s test on the Rice farm is a light gasser.

SOUTHWEST TEXAS FIELDS

(Continued from Page 50)

Bexar County, is location 150 feet to south and west lines.

Magnolia Petroleum Co.'s No. 12 W. J. Tiller, Luling Field, Caldwell County, is location in the John Henry Survey, 350 feet northwest of No. 1 test, has been spudded in.

Eckert and associates' No. 1 Blake, Atascosa County, 5½ miles southeast of Campbellton, is ready to spud in.

M. O. Rayor's No. 1 M August, A. Floyd Survey, northeast of Bruner's discovery well, the No. 1 Davis, has derrick up in Caldwell County.

Sutton & Smith's No. 3 Carter, few miles north of the No. 1 Davis, Caldwell County, has derrick moved out.

R. M. Bruner and W. H. Ballard's No. 1 Davis, 4 miles northeast of No. 1 Davis, has derrick up, also in Caldwell County.

O. W. Killam's No. 1 Bailey, William R. King Survey, Guadalupe County, 2½ miles northeast of Kingsbury, has been spudded in.

Humble Oil & Refining Co's No. 2 Kivlin, Section 39, Block 5, Kingsville Field in Kleberg County, is location due south of the No. 1-A Dennett; No. 5-A Dennett, Section 39, Block 11, has derrick up, in the same field.

Heap & Retherford's No. 1 Strauch, Refugio gas field, and northeast offset of the No. 1 Vance, is being deepened from 2,900 feet where it was abandoned some time ago by the Houston Gulf Gas Co. to pick up sand found at 3,800 feet in the No. 1 Vance, which is now standing.

Newton Drilling Co.'s No. 2 Bruni, Block 65, Albercas Field, Webb County, is rigging up.

O. W. Killam's No. 8 Bruni, Block 64, Albercas Field, Webb County, is drilling at 650 feet.

Magnolia Petroleum Co.'s No. 5 Benavides, Block 3, O'Hern & Seacord Subdivision, Cole Field, Duval County, is location; No. 1 A. M. Bruni, Survey 15, Block 10, Cole Field, Duval County, is location.

William R. Jewekk's No. 2 Hinnant is location in the Mirando Valley Field in Zapata County.

Cole Gas Field—Duval

Magnolia Petroleum Co.'s No. 4 S. Benavides, Block 3, O'Hern & Seacord Subdivision, 200 feet to southwest lines and 700 feet to northwest lines, has spudded in and set casing at 1,640 feet; No. 3 B. Benavides, corner of Blocks 146, 147, 194 and 195 (location changed), is drilling at 25 feet; No. 1 Valdez, Survey 754, located 150 feet to south and west lines, is moving on.

Humble-Reiter-Foster

Humble Oil & Refining Co.'s No. 7 Kohler, Survey 165, located 200 feet to north and west lines, is being put on the pump at 2,805 feet; No. 8 Kohler, Survey 405, is location 150 feet to east lines and 450 feet to south line.

Driscoll Pool

Robert Driscoll's No. 11 fee, Survey 448, located 560 feet to east line and 1,050 feet to south line, tested gas through drill stem and is setting casing at 2,454 feet. Edward St. Albans' No. 1 Hyatt, Block 25, located 450 feet to south line and 150 feet to west line, is drilling at 1,800 feet.

Government Well Field

Partee and others' No. 1 Hahl, Survey 78, Block 16, located 500 feet to north line and 150 feet to west line, is moving on.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 37 Merchants State Bank, Survey 415, located 150 feet to south and west lines, is rigging up. Frank Koury's No. 1 Jones Weil, Survey 81, Block 9, located 200 feet to east line and 150 feet to south line, has set casing at 1,292 feet in sand and is testing. Moody Corp.'s No. 14 Palacious, Survey 291, Block 11, located 150 feet to south and east lines, is rigging up.

Schott Field—Webb

Magnolia Petroleum Co.'s No. 1 Garcia (Carnahan), Survey 53, located 200 feet to south line and 500 feet to east line, is drilling at 3,937 feet; No. 11 M. & F. Garcia, Survey 58, is location 150 feet to north line and 1,620 feet to east line.

Albercas Field

Killam-Simms' (Maddox) No. 2 Bruni, Block 65, located 1,170 feet to south line and 150 feet to east line, is moving on.

Aviator or Bruni Tracts

Ruthada Oil Co.'s No. 8 A. M. Bruni, east one-half Block 18, located 500 feet to south line and 450 feet to east line, is drilling at 700 feet. Salley and others' (Radio) is making location on the old Radio lease.

Charco Redondo—Zapata

W. R. Duke's No. B-1 J. M. G. Martinez, Block 17, W. R. Duke Subdivision, 150 feet to southeast and southwest lines, is drilling at 222 feet.

Cole Field No. 2

Cole Petroleum Co.'s No. 56 Benavides, Survey 412, Block 3, located 160 feet to north and east lines, is drilling at 1,400 feet; No. 57 Benavides, Survey 412, Block 3, located 361.5 feet to east line and 162.5 feet to south line, has spudded in and set 10-inch casing at 103 feet; No. 58 Benavides is making location.

Dale Field—Caldwell

William F. Morgan, Inc.'s No. 2 Osteen, Swearingen Survey, is location 750 feet to east line and 150 feet to south line.

Luling Field

North & South's No. 1 Kelly is drilling at 7,586 feet in schist; No. 2 Tiller is also in schist at 7,228 feet.

Bruner Field

Lu-Tex Oil Co.'s No. 1 Wilson, A. Floyd Survey, 2,320 feet to east line and 200 feet to south line and 400 feet north of No. 1 Davis, is shut down.

Adams Field—Medina

C. E. Lange and Jake Jarmon's No. 1 Adams, Survey 71, located 500 feet to north and west lines of Block 20, is shut down at 164 feet.

Saxet Field—Nueces

Alamo Drilling & Leasing Co.'s No. 1 Gallagher, Survey 158, located 1,215 feet to north line and 650 feet to east line, is about ready to resume drilling at 150 feet. Saxet Oil Co.'s No. 3 Weil, 250 feet west of No. 1 LaPrelle & Reed, at 2,500 feet total depth, has whipstocked and now milling through casing at 2,450 feet. The Texas Company's No. 1 State, Survey 689, located 150 feet to west line and 425 feet to south line, has spudded in and set surface casing and resumed drilling.

Refugio Field—Refugio

Houston Oil Co.'s No. M. F. Lambert, D. Fox Survey, 500 feet CSL is drilling in sand rock at 1,660 feet. Houston Gulf Gas Co.'s No. 4 A. W. Heard is drilling at 2,980 feet; No. 1 Virginia Hallinan is setting casing at 414 feet. Saxet Oil Co.'s No. 6-A Wilson Heard is ready to spud in.

White Point—San Patricio

Alamo Drilling & Leasing Co.'s No. 1 Hunter, Seguin Survey, 150 feet to north line and 400 feet to east line, is reaming to set casing at 1,872 feet. Saxet Oil Co.'s No. 14 Rachal is drilling at 268 feet; No. 1 Hunter is building derrick.

West Field—Zavala

Tritex Oil Corp.'s No. 2 West, Survey 43, located 366 feet to north line and 266 feet east of Uvalde-Batesville highway, is drilling at 730 feet.

GULF COAST FIELDS

(Continued from Page 55)

tools. No. 1-A Grawunder is drilling sandy shale at 2,932 feet.

At Lost Lake, Pure Oil Co.'s No. 1 Lost River, tested salt water with a showing of oil at 3,671 feet. This, the first test on the dome, was deepened from a sand at 3,604 feet, where it found a little oil, which might have made a small pumper. What will be done with the test has not been determined.

Humble Oil & Refining Co. has a rig up for No. 3 Warren at Hockley, Harris County, and has made location for No. 3 Tex-Ex-Warren, 3,144 feet south and 420 feet west from the northeast corner of the Thomas Coghill Survey.

At Sweet Lake, Cameron Parish, Louisiana, Pure Oil Co.'s No. 4 Sweet Lake was bailed in but flowed only two hours when it sanded up. At present 2½-inch tubing is being run. This is an old well which found production in sand at 5,924 feet.

At Stratton Ridge, Brazoria County, Gulf Production Co.'s No. 3 Perry has been shut down for boiler repairs. It is at a depth of 5,782 feet. Bowman and associates' No. 1 Seaburn is drilling around 3,000 feet.

Miscellaneous Texas Wildcats

Alexander & Lyles' No. 2 Goebel, Austin County, is drilling at 3,325 feet. Weadock and associates' No. 1 Ward is drilling around 1,900 feet. The latter also is in Austin County.

B. A. Johnson's No. 1 Breeding, 2 miles northwest of Glidden, Colorado County, is drilling around 3,500 feet. E. M. Masterson's No. 1 Auerback, about 4 miles northwest of Glidden, is drilling below 1,000 feet. Rich Oil Corp.'s No.

1 Von Rosenburg fee, 2½ miles northeast of Columbus, Colorado County, is drilling around 2,275 feet.

J. G. Pundt is starting a new test in Grimes County, the No. 3 Cuthrell, P. B. O'Connor Survey, 200 varas from the west line and 75 varas from the north line of the 110-acre tract. No. 2 was abandoned at 623 feet.

H. R. Cullen and associates' No. 1 Dummit, a half mile south of Almeda, Harris County, south of Houston, is drilling below 1,800 feet. Hunt and associates' No. 1 Adorie-Lobit, 4 miles north of Goose Creek, Harris County, has been shut down.

A. M. Dean and associates' No. 1 Masham, 11 miles northwest of Spindletop, Jefferson County, is drilling at 510 feet.

Sun Oil Co. is to drill another test at Somerville, Washington County, the No. 1 Schirmer, N. Clay Survey, 575 feet from the northeast line and 150 feet from the northwest line of the 80.2-acre tract. It is 3,500 feet south of the No. 1 Freeman.

South Louisiana Wildcats

Southern Gas Co. has started drilling in its No. 1 Barrios, Terrebonne Parish. Rycade Oil Corp.'s No. 3 Atchafalaya fee, Bayou Bouillion, St. Martin Parish, is reaming to the bottom at 2,300 feet. Scroggins and associates' No. 1 Purveiance, Welch wildcat, Jefferson Davis Parish, has started drilling and is down 600 feet. Union Sulphur Co.'s No. 2 Schwing, Bayou Des Glaise Dome, Iberville Parish, encountered a water sand at 1,732 feet.

At Vermillion, Iberia Parish, Louisiana Land & Exploration Co. has spudded in its No. 2-A Vermillion Bay. Evangeline Oil Co.'s No. 1 Ducide Guillery, Pine Prairie Dome, Evangeline Parish, encountered a water sand at 2,787 feet and has been shut down. Roxana Petroleum Corp.'s No. 1 Watkins at Black Bayou, Cameron Parish, is in gypsum at 1,232 feet.

Gulf Coast Fields

Blue Ridge—Fort Bend County

Blakely & Means have deepened their No. 1 Blakely to a lower sand and as the week closed were bailing for a test. This is at 3,510 feet. The well originally was completed the latter part of March flowing 200 bbls. daily from 3,375 feet. H. R. Cullen and associates' No. 2 Davidson is drilling around 3,600 feet. No. 1 Luscher is down 4,968 feet. Cunningham Production Co.'s No. 1 Blakely has strainer set at 3,124 feet for a test. This test, completed last December for 100 bbls., 12 per cent water at 2,852 feet, was deepened during the week. Gordon & Sharp are preparing to deepen their No. 2-C Blakely. Gulf Production Co. is drilling at 3,349 feet in No. 11 Blakely and has a location for No. 13 Luscher. Navarro Oil Co. is drilling at 3,767 feet in No. 4-B Robinson. H. G. Nelms has a location for No. 2 Overly. No. 1 was completed earlier in the month making 200 bbls. daily from sand at 2,254 feet. Sinclair Oil & Gas Co.'s No. 1 Davidson is drilling at 3,265 feet. Sam Watts and associates' No. 3 Blakely is drilling below 3,320 feet.

Big Creek—Fort Bend County

Gulf Production Co. is building a derrick for another Big Creek test, the No. 46 Davis. No. 39, an old well being deepened, is drilling at 4,062 feet.

Nash Dome—Fort Bend County

Rycade Oil Corp.'s No. 23 Wisdom tried to blow out during the week and now efforts are being centered on getting screen into the hole for a test of the sand at 4,143 feet. No. 24 Wisdom is drilling hard, sandy lime at 4,102 feet. No. 25 Wisdom is drilling soft sand at 4,489 feet. No. 13 Nash is washing at 4,900 feet.

Hard'n County Domes

At Batson, Capitol Oil Co. has set strainer for a test at 3,895 feet in its No. 10 Hodges. Hill & Dowell's No. 96 is drilling at 1,298 feet. Paraffine Oil Co. has set strainer at 976 feet in No. 72 Paraffine and is bailing.

At Saratoga, Gulf Production Co.'s No. 26 B R R &C. is drilling at 1,474 feet. Paggi Brothers' No. 45 Queen is drilling at 1,175 feet. Rio Bravo Oil Co.'s No. 83 Jordit tested dry at 1,145 feet but is being deepened.

Gulf Production Co.'s No. 1 Hamman at Sour Lake is drilling at 4,235 feet. Humphreys Corp.'s No. 1-G Bashara, which was completed last February pumping 10 bbls. at 4,090 feet, is to be deepened. Lake View Oil Co. also is to deepen its No. 33 Hardin.

Pierce Junction—Harris County

Gulf Production Co. has abandoned temporarily its No. 1 Saunders at 4,090 feet but has moved over to No. 1 Perry and is rigging up to work over. The latter was completed last February flowing between 200 and 500 bbls. of pipe line oil but has fallen off sharply constantly. Gulf's No. 25 Taylor is drilling below 4,300 feet. No. 19 Taylor is being washed at 4,485. Abercrombie & Harrison's No. 1 John Ritter is drilling below 3,300 feet. H. R. Cullen and associates' No. 5 Howe is down 1,425 feet. Leonard and associates' No. 1 Settegast, 500 feet southwest of production on the west flank has set strainer again and is being washed. This test, in an oil sand at 5,940 feet, has been worked on for several weeks in an effort to bring it in as a producer. Moody Corp.'s No. 1 Settegast is drilling at 2,345 feet. No. 1 Mary Alston is down 2,415 feet. No. 1 Armstrong is at 5,564 feet. No. 1 Cooper has strainer set at 4,750 feet for a test of sand at that depth. Navarro Oil Co. has a rig up to deepen its No. 10 Dooley. Rio Bravo Oil Co.'s No. 8-B Settegast is drilling at 3,345 feet. This company also has a rig up to deepen its No. 5-A Settegast. T. G. Shaw's No. 2 Fitzsimmons is drilling at 4,390 feet. Smith and associates have a location for No. 3 Parsons. Woodward & Lee's No. 1 Settegast is drilling at 2,578 feet.

Goose Creek—Harris County

Gulf Production Co. failed to make a flowing well out of No. 16-A Tabb, an old well deepened to 3,496 feet and is putting it on the pump. Humble Oil & Refining Co.'s No. 73 Simms Smith is drilling sticky shale at 6,045 feet. This is 1½ miles east of the main part of the field. No. 51 Gaillard is bailing at 2,706 feet.

Spindletop—Jefferson County

Battleship Oil Co. has a location for another test, No. 1 Keith, on the northeast flank. Yount Lee Oil Co. is starting two new tests, No. 57 Gladys City and No. 66 McFadden. This company's No. 45 McFadden has drill stem stuck below 6,600 feet. Gulf Production Co.'s No. 13 Oakwood is drilling at 5,408 feet. No. 19 McLean is down 5,187 feet. No. 1 Jeanette Mann is drilling at 4,224 feet. Sun Oil Co.'s No. 4 Price is drilling at 5,260 feet. Sun Oil Co.'s No. 1 Prather is drilling at 4,185 feet. The Texas Company's No. 1 Gladys City is drilling at 4,060 feet. Traders Oil Corp.'s No. 1 Cissell is down 4,410 feet.

Hull—Liberty County

Empire Oil & Gas Co.'s No. 28 Barngrover, which was brought in two weeks ago flowing 832 bbls. daily at 3,120 feet, sanded up during the week and now is being worked on. Gulf Production Co.'s No. 20 Phoenix is drilling at 2,795 feet. Gulf has a derrick up for another test, No. 91 Phoenix. Houston Production Co.'s No. 4 Taylor is drilling at 4,300 feet. Republic Production Co. has set strainer for a test of sand at 2,379 feet in No. 77 Dolbear. The Texas Company has made location for No. 1 Carr. The Texas Company and Vacuum Oil Co.'s No. 6 Hannah still is milling on casing to sidetrack and deepen.

High Island—Galveston County

Gulf Production Co.'s No. 2-A Smith is drilling at 3,110 feet. Gulf's No. 1 League is drilling at 2,295 feet. Marrs McLean's No. 13 Cade is drilling at 2,700 feet.

Orange—Orange County

Gulf Production Co. has set strainer in No. 8 Chessom and will test sand at a total depth of 3,890 feet. No. 12 Peveto is drilling at 3,165 feet. Orange Petroleum Co.'s No. 3 Winfree, abandoned March 31 when it tested salt water at 3,602 feet, is to be deepened. Rycade Oil Corp.'s No. 13-E State has drill stem stuck at 5,687 feet. Supreme Oil Co.'s No. 2 Jackson is drilling at 3,878 feet. Tillery Oil Co.'s No. 3 Tasco has strainer set at 3,554 feet.

Barbers Hill—Chambers County

Location for two new tests were made at Barbers Hill, Humphrey Oil Corp.'s No. 1-A Barber and S. R. Williams' No. 1 Williams. The former is 5,280 feet from the west line and 2,300 feet from the north line of the Henry Griffith Survey, A-12, and the latter in the Bloodgood league, 75 feet from the south line and 75 feet from the east line of the north 20 acres. Bennett Petroleum Co. and Moody Corp. also have started to work over their No. 9 fee. It formerly was completed at 3,200 feet. Mount Belleview O'l Co. is drilling at 3,820 feet in No. 1 Williams.

Moores Field—Fort Bend County

Gulf Production Co.'s No. 15 Moore is drilling at 4,000 feet. No. 14 Moore also was worked over and strainer reset, the well now making more than 100 bbls. daily.

West Columbia

Gulf Production Co.'s No. 1 Tom Hogg is drilling at 2,782 feet.

Jennings—Acadia Parish

E. L. Meyers' No. 2 Arnandet is drilling at 1,710 feet. Port City Oil Co. has a location for No. 9, S.F.S.E.L. Survey. Simms' No. 1 Cockrell is drilling at 2,500 feet. The Texas Company's No. 3 Rayne heirs is drilling at 3,067 feet. Yount Lee Oil Co.'s No. 1 Crowley is drilling below 3,100 feet.

Edgerly—Calcasieu Parish

Green Oil Co.'s No. 1 Read is drilling at 3,087 feet. Hercules Oil Co.'s No. 4 Paraffine is below 4,000 feet. Rex Petroleum Co. is sidetracking at 3,952 feet in No. 4 Hunter. Wilson-Broach's No. 2 Wilson is drilling at 3,587 feet.

Lockport—Calcasieu Parish

Vacuum Oil Co. and Gulf Refining Co. have made locations for three additional tests at Lockport. These are: No. 20 Miller, a staggered offset to No. 6 Bordages; No. 2-A fee, another offset to No. 6 Bordages, and No. 1-B fee, an offset to No. 1-A fee. A rig is up to deepen No. 3 Frieber & Wolf. No. 1 Bayou D'Inde is milling on casing preparatory to sidetracking and deepening. No. 5 Lock-Moore is in sandy shale at 3,424 feet. No. 1 Calcasieu River is in sticky, sandy shale at 3,415 feet. A rig is up for No. 4-A Farquahar.

Vinton—Calcasieu Parish

Gulf Refining Co.'s No. 45 Star-Vincent is drilling at 3,009 feet. Marrs-McLean's No. 1 G.&N.G. is drilling deeper at 2,562 feet. No. 17 Gray is down 2,552 feet. No. 62 Gray is to be put on the pump at 2,375 feet.

Starks—Calcasieu Parish

Gulf Refining Co.'s No. 10 Industrial is drilling at 4,667 feet.

CANADIAN FIELDS

(Continued from Page 60)

LSD, which had a small production of light crude in the Blairmore-Dakota at 3,280 feet, has started drilling to the deep lime. Practically no new hole has been made, as some old pipe in the hole had to be drilled up. McLeod No. 4, same LSD, is drilling below 1,360 feet.

Spooner Oils' No. 1, LSD 12, Section 13-20-3w5, which froze after getting wet gas production in the deep lime at 4,930 feet, is being drilled deeper. Additional wet gas, estimated at 4,000,000 feet a day, has been encountered at 4,978 feet, and the test will be drilled deeper into the sand. Vulcan Oils No. 1, LSD 11, Section 13-20-3w5, which recently resumed production after being frozen more than a month, is making 100 bbls. a day of crude naphtha. Vulcan No. 2, same LSD, is working on casing at 4,855 feet. It should get production in 200 feet additional drilling.

In the north end of the field, Foothills Oil & Gas Co.'s No. 1, SW Section 28-20-3w5, has sidetracked a "fish" and is now redrilling at 3,160 feet. The old hole was at 3,498 feet when the fishing job started. Foothills No. 2, LSD 8, Section 1-20-3w5, is drilling at 2,735 feet. Dalhousie Oil Co.'s No. 1, LSD 4, Section 18-20-2w5, is maintaining its reported crude naphtha production of 250 bbls. a day from the deep lime. This probably will be increased somewhat when a second separator is in operation. Dalhousie No. 6, LSD 10, Section 13-20-3w5, has a sidetracking job, with the drillers working at 4,824 feet in what was previously a 4,850-foot hole.

Royalite Operations

Royalite Oil Co.'s No 6, LSD 16, Section 31-10-2w5, has resumed work at 4,280 feet. Royalite No. 8, LSD 9, Section 12-20-3w5, which was cemented at 3,676 feet, is resuming drilling after making up 3-inch pipe. Royalite No. 9, LSD 6, Section 13-20-3w5, is cemented at 4,085 feet and waiting for 4-inch pipe. Royalite No. 11, LSD 10, Section 12-20-3w5, is at 2,065 feet and drilling. Royalite No. 15, LSD 1, Section 12-20-3w5, is at 217 feet and drilling. Royalite No. 16, LSD 2, Section 12-20-3w5, is drilling at 232 feet. Royalite No. 13, LSD 6, Section 13-20-3w5, has derrick up. Royalite No. 14, LSD 4, Section 7-20-2w5, has derrick up. No. 14 is on the same section as No. 4 naphtha gusher, but a little south and east.

Home Oil Co.'s No 2, LSD 14, Section 20-19-2w5, is drilling at 3,887 feet. Calmont Oils, LSD 2, Section 1-20-3w5, is drilling below 5,200 feet, and is now the deepest hole actively drilling in the Turner Valley Field. British Dominion Oil Development Corp.'s No. 1, LSD 4, Section 5-20-2w5, is pulling casing, after abandoning its test at 6,600 feet.

In the north end of the Turner Valley, Stockmen Oils No. 1, LS.D. 1-2, Section 27-20-3w-5, has been finished in the shallow gas horizon at 1,760 feet. The outfit has been moved to No. 2 location in LSD 7, same section, pumps for the water line have been installed, and a gas line laid to supply fuel from No. 1. No. 2 will spud in within a few days.

Seneca Oils, LSD 1, Section 34-20-3w5, is reported at 4,006 feet and drilling. Sentinel Oil Co., Section 8-20-2w5, is shut down at 4,000 feet waiting for casing.

New McDougall Segur Oil Co. No. 3, LSD 14, Section 12-20-3w5, recently cemented around 1,870 feet, is starting to drill out the cement.

Okalta Oils No. 2, LSD 8, Section 1-20-3w5, which had a small production of light crude at 2,774 feet, has started drilling to the deep lime, the crew and outfit from Okalta No. 1 being used for the work. An 8-inch hole will be carried down as far as possible, and it is planned to set and cement the 6-inch casing on top of the deep lime. Okalta No. 1, LSD 1, Section 1-20-3w5, is on the top of the lime and cemented at 4,640 feet and waiting for a new diamond drill outfit to drill into production. This outfit will later be used to complete No. 2. The diamond drill outfit may start work on No. 1 some time in May.

Illinois-Alberta Oils No. 2, LSD 14, Section 12-20-3w5, is reported drilling at 1,852 feet.

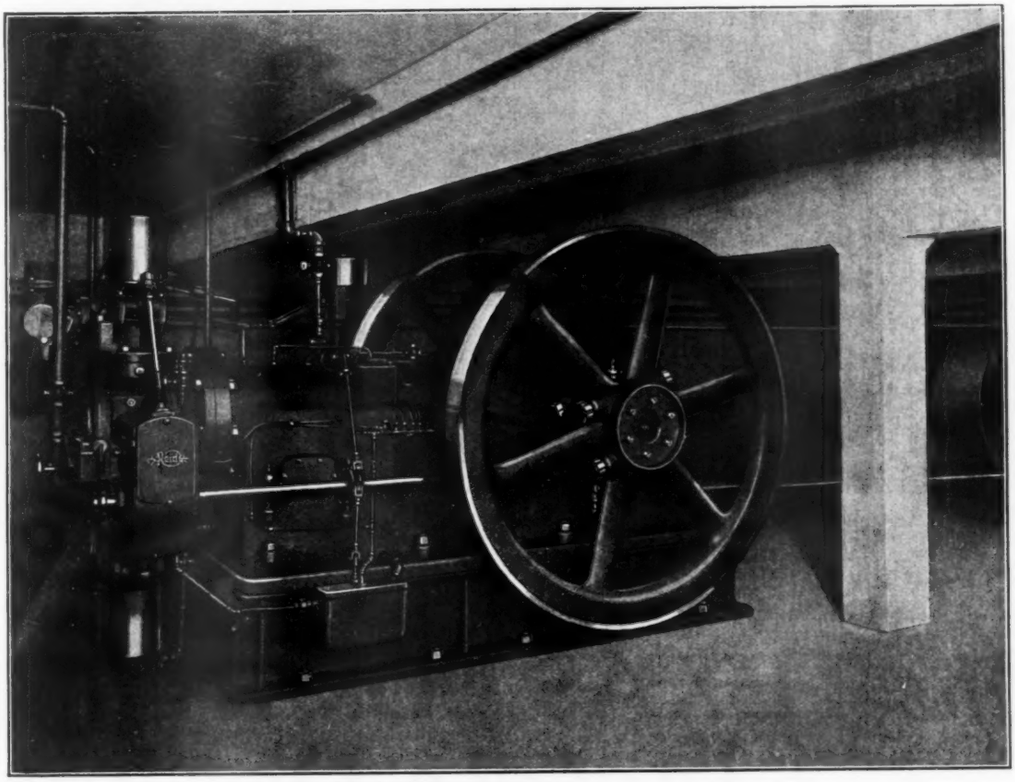
East Crest Oil Co. has located a test in LSD 5-6, Section 16-19-2w5, in the south end of the field near the Home producers, and has leased the Cooper-Nanton outfit, which will be moved to location as soon as possible. The East Crest will probably spud in some time in May.

The Alberta provincial law providing for a 9-hour day for drillers came into force on April 1. In the Turner Valley Field, wells which were previously running two shifts a day are now running three 8-hour shifts. Outside the Turner Valley Field, most of the wildcat tests are reported drilling with one 9-hour shift.

Moose Mountain

In the Moose Mountain district west of Calgary, Signal Hill Oil Co.'s No. 2, LSD 9, Section 34-23-5w5, is at 1,977 feet with casing set at 1,874 feet, and underreaming to run the casing to the bottom of the hole. The casing is being carried down close behind the drill. If the indications in the old Moose Mountain wells are dependable, the test should at this depth be within 300 feet or less of a potential oil horizon.

In the Morley Reserve area, Wabas



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Oils, Ltd., diamond drill test is reported drilling around 1,100 feet. Watson Oil Co., which made a location in this area last fall, has secured additional acreage close to the Wabash test and may shift its location to its new holdings. The Morley Reserve area is an extension of the Moose Mountain structure, in the foothills west of Calgary; and it is claimed that the Madison limestone is unusually high with the overlying Benton shales and most of the Blairmore-Dakota formation eroded. The Dakota is the outcropping formation on part of the structure. This condition would bring the "deep lime" horizon of the Turner Valley Field within easy reach of the drill in parts of the Morley Reserve area. The structure apparently dips very sharply, however, as the Gold Coin Oils, Ltd., test on another part of the Reserve went to 3,928 feet last season without getting production.

In the Turner Valley Field, Dixie Oil Co. has a location in LSD 8, Section 11-20-3w5.

On the Sinclair structure, Evorne Oils, LSD 4, Section 34-19-4w5, has a derrick up.

In the Aldersyde district south of Calgary, Ranchmen's Oil & Gas Co., LSD 16, Section 13-20-29w4, is reported at around 2,500 feet and temporarily shut down. Arrangements are being made for completion of the well by the Union Drilling Co. under the supervision of George Muir and William Maughan. Three tours will be run. The location is on the Campbell-Aldersyde Dome. Some drilling had been done, a shallow test on the Bird ranch producing considerable gas while two tests were drilled by the late Sam Drumheller. The report on the structure identified the formations at 2,400 feet with the Kootenay, underlying the Benton shales and Blairmore-Dakota sand; while the absence of water was held to indicate that they were on structure. According to the report, the Kootenay at this point might be 900 feet thick, which was thicker than in Montana, with the probability of gas rather than oil in the first sand and the prospect that any oil struck in the Kootenay would be a light green crude of paraffin base. The Ranchmen's Oil & Gas Co. has recently taken up 1,000 acres additional on the structure, making a total of 3,000 acres held by this company.

Oil Producers Corp. of Canada has a derrick up in LSD 4, Section 24-22-23w4, northwest of Gleichen; and is arranging to finance a test to spud in this spring.

Ribstone-Blackfoot

On the Ribstone-Blackfoot structure, east central Alberta, Ribstone Oils, LSD 1, Section 1-46-1w4, has encountered another water sand at 1,974 feet which is being cased off. A previous water sand at a higher level was successfully shut off some time ago.

In the Suffield district, near Medicine Hat, Ontario Alberta Development Co., Township 17-8w4, has its camp complete and is working on derrick. The test will likely start drilling in May. H. B. Pearson of Calgary is in charge.

In the Chin area, Lethalta Oils is hauling a drilling outfit to location. The interior Oil Co. outfit from Wainwright is being used for the test. Canadian Western Natural Gas Co. is reported moving a rig from the Barnwell Field to drill a test for gas 1 mile north of Chin.

Madison Oils, Ltd., of Calgary is reported getting ready for a test in LSD 8, Section 24-2-11w-4, on the Beaver Dome, not far from the international boundary. The company recently secured additional acreage in this area. The Beaver Dome is thought to be on a northern fold of the Sweetgrass Hills structure. The present location is stated to be tentative, and T. G. Madgwick, federal petroleum engineer, will, it is stated, assist in making the exact location for the company. The Beaver Oil Co. well drilled in 1914 got shows of gas and oil around 2,450 feet, and Madison Oils No. 1 is primarily intended to test this horizon. A standard rig from the Montana field is being moved north for the test, which will be put down for Madison Oils, Ltd., by the Union Drilling Co., the work being in charge of William Maughan. The test is expected to spud in early in May, and should reach the horizon where the Beaver well got its showings by early summer. British Dominion Oil Development Corp. of Calgary is reported to have secured some acreage on the same structure, but is not likely to drill there till its No. 2 test in the Turner Valley Field is finished.

In the Warner district, Gas Production & Transportation, NE Section 21-4-18w4, is standing cemented at around 3,400 feet. At this depth the test is thought to be approximately 200 feet above the Ellis sand.

North of Calgary

A Vancouver, British Columbia, group headed by R. P. Foster and C. Gibbs is securing acreage in a number of potential areas from the Montana boundary to north of Calgary, and is planning to put down a test this season. A Montreal syndicate is arranging for a test near Burmis, Alberta, to be drilled this season.

In the De Winton area near Calgary, Anglesey-Lakeview No. 1, LSD 1, Section 22-21-1w5, is unofficially reported drilling at 3,200 feet.

On the Montana side, the Sunburst Oil & Refining Co. producer in the Flat Coulee area close to the Canadian boundary is being cleaned out and attempts will be made to flow the oil from the Baskoo sand with the gas from the Ellis. It is not definitely known what the well will do in the way of production.

In the Pincher Creek district, Alberta Gas & Fuel Co. Doherty No. 1, Section 34-2-29w4, near Hillspring, is reported running three tours and drilling below 1,900 feet. Mount Royal Oil & Gas Co. No. 1, LSD 4, Section 7-6-1w5, is planning to resume drilling next week at 1,000 feet.

In British Columbia, the B. C. Oil & Development Co. No. 2 test in the Sage Creek district, which has been snowed in for months, is reported again drilling at 600 feet.

In Saskatchewan, Big Six Oil Co. of Saskatoon is reported ready to resume drilling on its No. 3 test in LSD 16, Section 18-29-2w3, near Kenaston, which was shut down last fall at 81 feet. Resumption has been held up by unfavorable weather conditions.

The Pike Lake Oil & Gas Development & Exploration Co. has secured a Dominion charter and will drill a test near Pike Lake, 22 miles southwest of Saskatoon. The structure at this point was mapped by E. B. Emrick.

In the Simpson district, Simpson Oil Co., Section 9-29-25w2, is reported to have resumed drilling at 1,400 feet, after being shut down for the winter. Roy Berray is in charge of operations this season.

SOUTHWEST WILDCATS

(Continued from Page 50)

fields to the north and a little more drilling will find out what is in that horizon.

Duval County

National Oil Co.'s No. 1 Ball, Survey 16, located 450 feet to north line and 150 feet to east line, is standing at 2,212 feet. Houston Oil Co.'s No. 1 Woods-Welder, Survey 233, located 1,750 feet to west line and 100 feet to north line, is drilling at 3,240 feet.

Hidalgo County

Queen City Oil & Gas Co.'s No. A-1 Adams, Survey 82, located 2,640 feet to north line and 1,320 feet to east line, is drilling at 130 feet in gumbo. Haergil Oil Co.'s No. 1 Stevenson, Section 31, Block 15, Las Mestinas Survey, is location 150 feet to south and east lines.

Jim Hogg County

M. I. Shaw and others' No. 1 Jones, Survey 381, Block 12, located 171 feet to south line and 486 feet to west line, is standing at 2,290 feet. Holden and others' No. 3 Jones, Share 27, Block 136, located 330 feet to east line and 440 feet to north line, has resumed drilling at 2,548 feet after shut down of several months.

Starr County

The Texas Company's No. 1 M. Guerra, Porcion 68, Block 91, located 1,000 feet to east line and 150 feet to south line, is drilling at 1,687 feet; No. A-1 V. Guerra, Porcion 68, Block 92, located 150 feet to south and east lines, is standing at 250 feet. J. V. McAleese and others' No. 1 Hicks & Hicks, Perdernal grant, 150 feet to northeast lines and southeast lines, is drilling at 290 feet. Kusch Exploration Co.'s No. 1 Frank Doyno and others, Porcion 75, Block 13, is standing at 756 feet.

Zapata County

Hill, Reiser & Weed's No. 1 H. Rodriguez, Block 1, R. V. Hill Subdivision, 870 feet to northwest lines and 450 feet to northeast lines, is drilling at 400 feet.

Bexar County

Allen Burnam's No. 1 Ward, A. A. Gardiner Survey, southwest of Martinez, is drilling at 1,100 feet in base of the Taylor marl. Larsen-Walsh and others' No. 1 Oppenheimer, William Miller Survey No. 180, 18 miles southwest of San Antonio, is drilling at 1,940 feet, probably in the Georgetown. C. J. Le-Complte's No. 2 Diaz, Survey 32, Block 4,283, located 450 feet north of No. 1, is shut down at 72 feet on rock. F. H. Meyer's No. 1 B. Biering is drilling at 93 feet.

Bastrop County

Gypsy Producing Co.'s No. 1 Pritchett, 7 miles east of Bastrop, has resumed drilling at 1,950 feet. J. F. Miller Drilling Co.'s No. 1 Ed Jones, located 150 feet to north and east lines of 34.5-acre tract, is drilling at 150 feet.

Bee County

D. Hewitt's No. 1 G. A. Ray, northwest of Pettus at 2,393 feet had sticky shale and lime showing salt water and gas and is now at 2,410 feet waiting on orders; No. 1 Schultz is down 1,200 feet. Red Ant Oil & Gas Co.'s No. 1 Perry & Chestnut, B. Q. Hadley Survey, 450 feet to east line and 1,600 feet to south line of farm, is shut down at 1,375 feet, with 15 inches of sand at 887 feet that correlated with blowout sand in Houston Oil Co.'s discovery well in the Live Oak Field on Cartwright farm.

Blanco County

C. W. Bates' No. 1 Herman Massey, Henry Manton Survey, 920 feet to north line and 660 feet to east line of survey, is fishing at 214 feet. Robert Rodson's No. 1 Glasscock, Survey 50, located 150 feet to CEL, has moved in cable tools and about ready to resume drilling at 435 feet.

Caldwell County

Louis P. Schawe's No. 1 Ted Schawe, Thomas Maxwell Survey, 6,111 feet to southeast lines and 6,986 feet to northeast lines of survey, topped chalk at 769 feet showing considerable gas. Trinity Drillers' No. 1 Miears, C. M. Cannon Survey, 150 feet to south and west lines, is drilling at 2,200 feet, after setting casing and testing Serpentine at 1,996-99 feet that showed very little oil after bailing to the bottom, and test will be drilled down to the Edwards lime.

Comal County

George Kruger's No. 1 Whitmore Decker, A. Gayetan Survey No. 194, is location in SE cor.

DeWitt County

Durbin Oil Co.'s No. 1 Gohmert, G. W. Brooks league, is shut down at 3,013 feet. Empire Southern Oil Co.'s No. 2 Smith, Survey 3, is shut down at 3,150 feet. H. T. Roe's No. 1 Lienhard, D. J. Bibb Survey, is shut down at 905 feet.

Dimmitt County

Humble Oil & Refining Co.'s No. 2 City National Bank, Survey 25, located 150 feet to north line and 860 feet to west lines, is drilling at approximately 1,450 feet and near sand found in No. 1 which showed gas.

Gonzales County

Gonza Petroleum Co.'s No. 2 Elder, Block 11, is shut down at 1,250 feet; No. 1 Sinclair is shut down at 1,200 feet. W. G. Malone's No. 1 Mrs. D. G. Staton, 3½ miles south of Slayden, is drilling. The Texas Company's No. 1 Denman, A. Zumwalt Survey, 100 feet to south and west lines, is in hard sand at 457 feet. L. P. Unkel's No. 4 W. W. Johnson in the shallow Slayden Field, is location 300 feet east of No. 3.

Guadalupe County

J. M. Rentz' No. 1 Siligman & Freeman, G. Chotwell Survey, 1,100 feet to southwest lines of farm and survey and 1,130 feet to southeast lines of farm is shut down at 690 feet with no chalk yet.

Hays County

Estess-Moore & King's No. 1 C. N. Sledge, Huton & Jones Survey, 1 mile from Kyle has spudded in and set three joints of surface casing and resumed drilling. H. E. Rodgers' No. 1 E. Hohenburg, 2½ miles east of San Marcos, is standing at 2,189 feet where test bailed a little oil.

Jackson County

J. B. Douglas is drilling water well in preparation to drilling No. 1 C. O. Lowrance, 12 miles northwest of Edna.

Jim Wells County

Cushing Oil & Gas Co.'s No. 1 M. Perez, La Tinaja Survey, 600 feet to north and east lines of survey, is drilling in red sandy sticky shale at 1,123 feet.

Kerr County

Walker-Van Duyn's No. 1 Barfield, B. B. Peck Survey, 4,700 feet to north line and 450 feet to east line, is shut down at 2,100 feet.

Live Oak County

War. Wood Hunt's No. 1 McNeil, Jane Curry Survey, is standing at 2,505 feet.

Medina County

Yantis and others' No. 1 Saathoff, Gerhard Ihnken Survey No. 40, located 155 feet to south and west lines of survey, is drilling at 700 feet. Medina Oil Co.'s No. 1 Taylor, Survey 135, is shut down at 1,243 feet. Cecil Switzer's No. 1 Zerr, Survey 459, is shut down at 3,485 feet. California-Medina's No. 1 Rothe, Survey 1,012, is shut down at 3,275 feet.

Maverick County

Ryan Consolidated Petroleum Co.'s No. 1 Indio, Survey 14, center, is drilling in lime at 4,400 feet. Rycade Oil Corp.'s No. 1 Chittim, Section 129, Block 7, is shut down at 4,295 feet for water; No. 2 Chittim, Section 158, Block 7, is drilling at 5,125 feet with slight showing of oil and gas.

McMullen County

Houston Gulf Gas Co.'s No. 6 Jacob is location.

San Patricio County

Harry Carter has derrick up for No. 1 Mayfield. Houston Gulf Gas Co.'s No. 2 Welder, Calixto Survey, east central part of the lease, is drilling at 2,800 feet. National Oil Co.'s No. 1 J. E. Sullivan, J. C. McMullen Survey, 500 feet to SW cor., at 2,330 feet is having trouble with hole caving and is hauling in mud and using barite. George B. Pickett's No. 1 Whitworth, NW NW, Section 60, is drilling in hard formation at 3,000 feet; No. 1 Garrett is shut down at 3,030 feet. John Sigmund's No. 10 Robinson, 60 feet south of No. 9, is deepening from 1,900 feet.

Travis County

T. P. Garrett's No. 1 Paul Rowe, R. Hornsby Survey, 900 feet to north and east lines, is shut down at 1,025 feet; W. J. Hill's No. 3 fee is shut down at 400 feet.

Uvalde County

Pure Oil Co.'s No. 1 J. D. Smythe, Survey 687, located 740 feet to north line and 146 feet east of SE cor. of Survey 20, is at 2,378 feet.

Val Verde County

Valvert Oil Co.'s No. 1 Bassett, C E half Section 47, Block Y, is moving on. Independent Operator's No. 1 Whitehead, SE SE, Section 30, is shut down at 3,900 feet. Magnolia Petroleum Co.'s No. 1 Whitehead, Section 81, is drilling at 6,630 feet in black shale and lime. O. O. Owens and others' No. 1 Mills, Section 128, is standing at 4,210 feet. W. V. Traves' No. 1 Wilson, Section 115, is standing at 905 feet.

Frio County

Blue Ribbon Oil & Gas Co.'s No. 1 Edwards, Hooper & Wade Survey, 920 feet to CNL, is at 1,825 feet and rathoing ahead.

MUSKEGON FIELD

(Continued from Page 59)

is the Dixie Oil Co.'s No. 1 Figge-B hole, drilling at about 1,500 feet and expected to pierce the Traverse sands within a few days. Formations are running practically the same as in the Nichols, so a good well is expected.

On the adjoining 15-acre piece owned by G. Kooi, the Joliet-Morris Development Co. has started its second well in the field. The company is one of the five subsidiaries of the Muskegon Oil Corp.

The Lake Shore Petroleum Co. has been granted the lease on the 6-acre piece adjoining the Kooi property for its second well in the field as the No. 1 DeVries. This is another subsidiary of the Muskegon Oil Corp.

A third subsidiary, the Citizens Petroleum Co. is moving a rig upon a two-acre piece adjoining the DeVries property on the south end for its No. 1 A. Heinz well. Two other locations immediately east of the A. Heinz property have been announced by a syndicate composed of Glenn M Porter, a Muskegon realtor; three other Muskegon capitalists, and V. M. Voorhees, contractor, and by William Bradley. The Porter Syndicate will drill its No. 1 Workman well on property formerly owned by Thomas G. Kooi. The Bradley well will be his No. 1 Alex Layman hole. Mr. Bradley gave up his plans to drill on the property of W. Burns in SE SE Section 5 to make this new location.

Hagan & Hagan have moved in for the Wa-jo-sol Oil Co.'s No. 1 Reeths well, immediately north of the discovery. The location is in the extreme SW SW Section 4, Muskegon Township.

In SW SE Section 4 on an adjoining 40-acre piece owned by Albert Becker, the Dixie Oil Co. has started its No. 1 Becker well. Edward Stewart, who drilled their No. 1 Figge-A well, is the contractor for this new well, their third in the field.

To Drill in No. 1 Reeths

Considerable interest is being shown in the attempts of the Muskegon Oil Co. to clean out the discovery or No. 1 Reeths well in NW NW Section 9. Production dropped to 20 bbls. a day before the company moved a rig over the hole. The casing, which dropped to the bottom of the hole in the course of drilling the well, is to be removed and replaced with new casing. The well then will be drilled in for the first time, for it was drilled only 4 feet into the Traverse sands when it was brought in December 22, 1927.

No little attention also is being given to the Lima Oil Corp.'s No. 1 Margaret Figge well which came in with a flow of 5,000,000 cubic feet per day of gas, the largest gas well in Michigan. The gas was cased off at 1,610 feet and the well drilled to 1,640 feet with the result that another 1,000,000 cubic feet of gas but only a spray of oil was found. The well is now capped for a gas well.

Less than 600 feet west is the Dixie Oil Co.'s No. 1 Reeths gasser which was capped after efforts to add oil to the 4,000,000 cubic feet of gas pouring from the hole were abandoned. The well was drilled to about 1,635 feet but is now capped for the gas.

During the past week two wells north and east of the discovery about a quarter of a mile have been shot, each with 160 quarts of nitroglycerin. The Muskegon Oil Corp's No. 1 H. Heinz, the first to be shot, is now making 45 bbls. daily as a flowing well. It has not yet been completed, however, as about 30 feet of the bottom of the hole caved in and is being drilled out. The other shot made a good pumper of the A. S. Cochran No. 1 Taggart well in SE SE Section 5. The well swabbed 40 bbls. of oil after casing had been lowered into the hole.

Bulldog Well at 1,550 Feet

Latest information on the Bulldog Oil & Gas Co.'s No. 2 Giles well in SE SE Section 6 is that it is drilling at about 1,550 feet. The only rotary rig in the field is in operation on this well and has been for more than two months. The rig has been drilling longer on this one well than any other rigs in the field have taken to complete two wells.

The latest move of C. Wilbur White, president of the Bulldog company, has been the sale of his leases on more than 700 acres in Laketon, Dalton and Muskegon Townships to the Natural Gas & Oil Co., a concern organized under the laws of Delaware with offices in Chicago and Detroit.

Although a 2-foot show of oil was found in the bottom of the Reed Oil Co's No. 1 Torrent well, one of the two which have been drilling on the Muskegon River Flats, it is not anticipated that the well will make more than an edge pumper. The show was found at 1,676 feet. As the surface elevation on this well is 40 feet lower than in the discovery, this is equivalent to 1,716 feet, or about 60 feet low on the structure.

The other well on the flats is the Muskegon Oil Corp.'s No. 1 Torrent in SW SE Section 8, which was reported to be 22 feet low on the red rock. A good show of oil was encountered in the Berea, however, and drillers are looking forward to bringing in the well within a few days. It was drilling today at about 1,200 feet.

L. L. Balch of Chicago has been awarded the lease on 20 acres in SW NW Section 8, upon part of which the Muskegon County Tuberculosis Sanitarium is located. Mr. Balch agreed to pay the county $500 for the lease and to sink a well upon the property within 75 days. In the event oil or gas is found the county is to receive 12 per cent of the oil and 15 per cent of the gas. The property is less than half a mile due west of the Nichols well, the largest producer in the field.

The combined flow of the present gushers and pumpers in the field is only 630 bbls., a decrease of 400 bbls. from the peak flow at the time the three present largest gushers were brought in. The flow decreased very rapidly but has been rather steady at a total of about 600 bbls. for the past week or 10 days.

Production of the eight completed oil wells in the field is as follows: Muskegon Oil Corp.'s No. 1 Reeths, or discovery well, 20 bbls.; Muskegon Oil Corp.'s No. 1 Figge, 90 bbls.; Muskegon Oil Corp.'s No. 1 Heinz, 45 bbls.; Joliet-Morris Development Co.'s No. 1 Nichols, 185 bbls.; Muskegon Development Co.'s No. 1 Hartman, 145 bbls; Dixie Oil Co's No. 1 Figge-A, 110 bbls.; Johnson Oil Refining Co.'s No. 1 Smith, 20 bbls., and J. B. Reed's No. 1 Shoup, 10 bbls.

The A. S. Cochran No. 1 Taggart swabbed 40 bbls. after the casing was first lowered but has not yet been placed on a regular daily production basis. It probably will make about 25 or 30 bbls. per day.

In addition to these wells, there are two successful gas wells in the field in the Lima Oil Corp.'s No. 1 Margaret Figge at 6,000,000 feet per day and the Dixie Oil Co's No. 1 Reeths at 4,000,000 feet per day.

CALIFORNIA FIELDS

(Continued from Page 59)

ing 1,150 bbls. per day four weeks after completion. The Richfield opened negotiations for the purchase of this company a few days ago and if a satisfactory deal can be arranged the Republic's holdings may pass into new hands.

Kern River

Development work in the West Front area of the Kern River Field is reflecting the artificial curtailment in production undertaken in that area three weeks ago and there are only five strings of tools running in contrast to the 15 in operation during March. The California Petroleum Corp. has six incompleted drilling projects in Section 14-28-27, and while these may subsequently be drilled to the top of the pay all work has been temporarily suspended. The Petroleum Securities concluded drilling No. 13-A Robinson in Section 22-28-27, at 2,435 feet and while it may be given a temporary production test within a few days it will be immediately shut in. No. 40, a recent spud on the same lease, has been suspended at 180 feet and it will probably stand in status quo until production is resumed. The California Star, Chanslor-Canfield Midway Oil Co., General Petroleum, Standard, Brownmoor and St. Helens Petroleum have also temporarily suspended active development.

Drilling operations in the Round Mountain Field will probably also be reduced to an absolute minimum in the very near future, although development work in this area is not of any special consequence at present as the absence of pipe line facilities precludes continuous production regardless of the number of new wells. The Shell company has not experienced very much success with its drilling operations on either the Freeman or Jewett leases in this field, although Nos. 1 and 2 on the latter property are capable of making an aggregate production of approximately 200 bbls. daily from the shallow zone, but the Honolulu company is experiencing considerable success, this company having brought in three new wells since taking over the holdings of the Elbe Oil Co. several months ago. During the past week the Honolulu company put No. 55 Tibbett on a temporary production test at 2,025 feet but it only showed relatively small production and drilling has been resumed. No. 94 Matthews, in Section 20-28-29, was given an exhaustive production test and it will probably be abandoned in the near future as this hole, which was originally carried down to 2,419 feet and subsequently plugged back to 1,725 feet, did not prove commercially productive. The California Petroleum has just about concluded rigging up No. 1 Conry, its first well at Round Mountain in Section 15-27-28, and spud is scheduled for early next week. The Shell company spudded in No. 4 Glide in the Mount Poso Field located approximately 15 miles north of Bakersfield in Kern County, and this project, a new well in Section 1-27-27, got under way a few days previous to the spudding of No. 1 Glide in Section 7-27-27, another new well. The General Petroleum has given up the attempt to develop clean commercial production in its discovery well, No. 1 Kerwin, in the Edison Field of Kern County, 7 miles east of Bakersfield, and drilling has been resumed in an effort to prove or disprove the existence of a deeper and more productive horizon below the present sand at 4,047 feet.

Northern California Wildcats

The Scott Petroleum Co. failed to get a satisfactory water shut off in its wildcat at Rincon Creek, north of the Rincon Field of Ventura County, and it has accordingly been recemented. This test has actually logged a rather favorable oil sand although its potentiality has not yet been determined due to the fact that drilling was concluded as soon as the sand was found and consequently it is not known how thick it may be. The Pacific Eastern Production, Gulf interests, is making a very exhaustive test in its No. 2 Union Avenue, south of Bakersfield in Kern County, and while some evidences of gas accumulation have been noted the showing of oil in this hole does not compare with that found in No. 1 Union Avenue and this condition has led many to believe that the potential field in this section is south of the area being prospected. The Milham Exploration Co. finished its fourth gas well in the Buttonwillow dry gas area and the completion of this well has undoubtedly brought the projected natural gas line to San Francisco a lot nearer completion and while actual construction will probably not be undertaken for some time it looks like an almost sure shot before the present year draws to a close. The most interesting development in northern California wildcat circles during the week was the staking of a location by the General Petroleum for a new wildcat to be drilled just north of the town of McFarland in Kern County and it is understood drilling will be undertaken immediately. Drilling operations in the Kettleman Hills district of Kings County has reached a rather uninteresting stage although the Milham Exploration Co. logged some rather encouraging gas showings around the 7,200-foot level. This section of the State calls for deep drilling and consequently a 7,200-foot hole in this area can not be considered doubtful, although something definite should be picked up very soon now if commercial production is to be secured.

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total This Week	Daily Average	Total Last Week	Daily Average	This Year to Date	Same Time Last Year
Crude oil	80,750	11,536	184,110	26,301	1,859,261	2,541,476
Fuel oil	.....	.....	.....	.....	.....	2,096,379
Diesel and gas oil	75,110	10,730	.....	.....	586,914	1,270,629
Gasoline	155,228	22,175	211,837	30,262	3,108,114	2,386,095
Tops	.....	.....	.....	.....	.....	.....
Coastwise—						
Crude oil	352,194	50,313	471,812	67,402	5,304,878	3,753,013
Fuel oil	507,368	72,481	480,700	68,671	5,693,809	4,204,010
Diesel and gas oil	6,101	872	16,947	2,421	353,752	67,969
Gasoline	251,747	35,950	218,554	31,222	3,647,581	2,717,233
Kerosene	1,550	221	.....	.....	24,415	43,103
Tops	.....	.....	.....	.....	171,566	.....
Exports—						
Crude oil	75,025	10,718	.....	.....	673,326	1,232,377
Fuel oil	586,483	83,783	566,396	80,914	7,713,682	3,877,626
Diesel and gas oil	19,500	2,786	37,230	5,319	575,348	379,297
Gasoline	214,610	30,659	65,000	9,286	1,466,148	674,533
Tops	.....	.....	.....	.....	.....	227,204
Kerosene	320,682	45,812	.....	.....	1,529,919	876,777

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Crude oil	.....	.....	.....	.....	.....	.....
Fuel oil	.....	.....	.....	.....	.....	.....
Diesel and gas oil	.....	.....	.....	.....	342,425	415,555
Gasoline	75,460	10,780	152,811	21,830	638,737	811,430
Tops	.....	.....	.....	.....	.....	.....
Kerosene	.....	.....	.....	.....	.....	.....
Lubricants	.....	.....	.....	.....	138,769	111,970
Coastwise—						
Fuel oil	48,486	6,927	.....	.....	1,097,007	1,958,920
Diesel and gas oil	10,450	1,493	.....	.....	98,436	134,308
Gasoline	114,044	16,292	58,796	8,399	995,882	1,630,850
Kerosene	.....	.....	.....	.....	75,223	48,185
Exports—						
Crude oil	.....	.....	.....	.....	25,029	.....
Fuel oil	64,872	9,267	56,918	8,131	654,852	679,592
Diesel and gas oil	.....	.....	.....	.....	10,400	.....
Gasoline	55,100	7,871	.....	.....	1,274,512	1,301,722
Kerosene	24,987	3,570	.....	.....	307,089	510,187
Lubricants	.....	.....	.....	.....	.....	9,130

LA.-ARK. WILDCATS

(Continued from Page 53)

wells and start new work. Pure Oil Co., among others, has made location for Nos. 2 and 3 Gregory in Section 11-17-14, and has derrick up for No. 2. C. E. Murdock has rig up for No. 2 J. N. Gregory in Section 10-17-14. Murdock acquired the 2,760-foot sand discovery well in Section 10-17-14, completed about January 1, by Garrett-Modisette Drilling Co. a couple of months ago after Keen & Woolf had taken an interest in the property. Lion Oil Refining Co. has come into the field and has derrick up for No. 1 Nash, a semiwildcat in Section 6-17-13, about a half-mile east of the discovery wells in the north end of the pool.

Five wildcats in DeSoto and Union Parishes, Louisiana, were failures this week. R. O. Roy, who blocked several thousand acres in the north half of Townships 13 and 14, Range 13, DeSoto Parish, tested dry and abandoned. No. 1 Tracy, in Section 3-13-13, at 1,650 feet and No. 1 Whitaker in Section 5-13-13, was dry at 3,005 feet, neither having made a show of either gas or oil to warrant a test. No. 1 Lee, in Section 33-14-13, was abandoned as a derrick. Barbour Oil Co. abandoned No. 1 Tugwell, in Section 21-22-1e, Union Parish, as a junked hole at 2,434 feet where it had tested salt water several weeks before. Ouachita Natural Gas Co. abandoned No. 1 Hamilton in Section 22-19-1e, Union Parish, as a dry hole at 2,276 feet after testing dry on a show of a little

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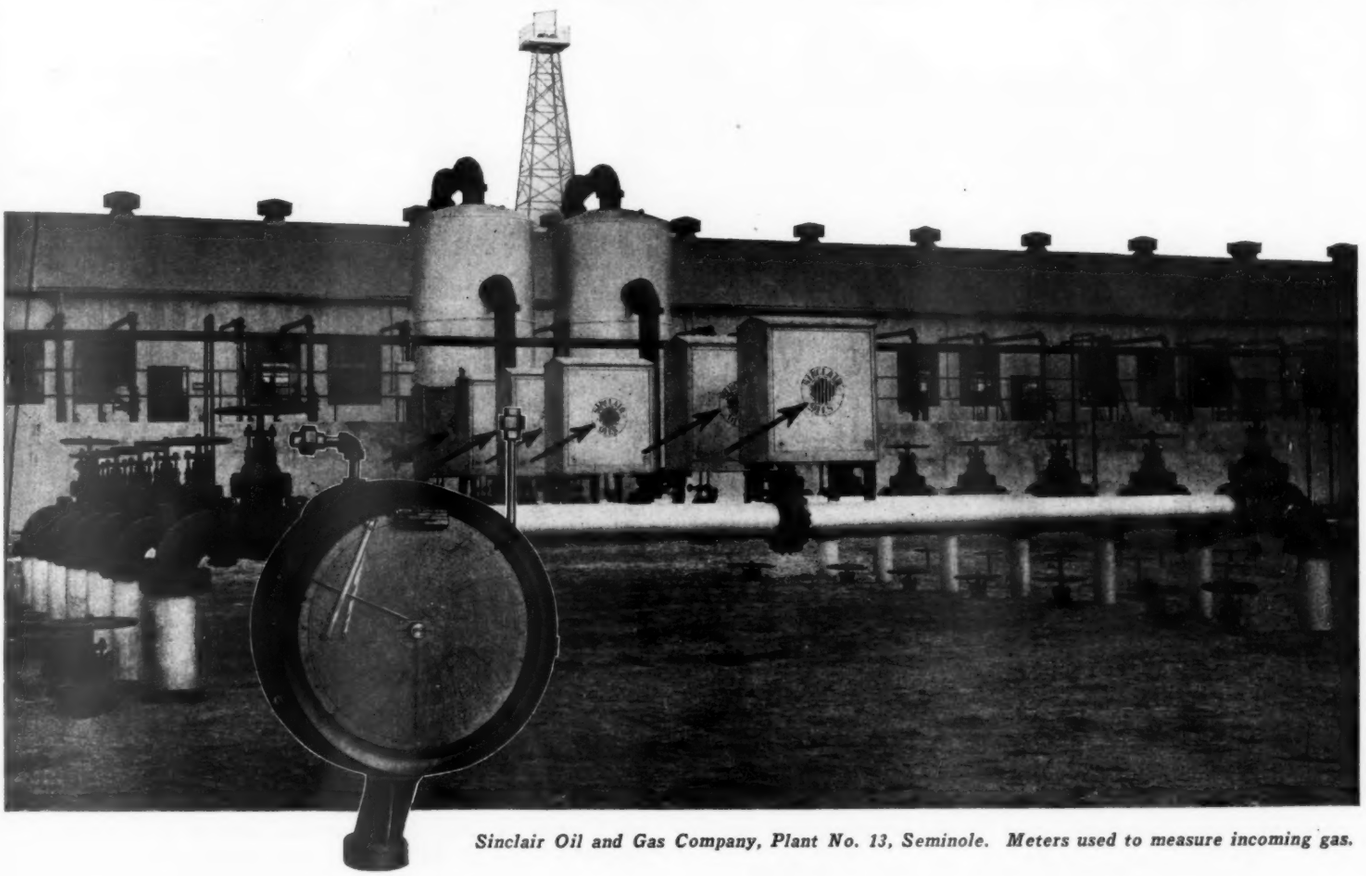

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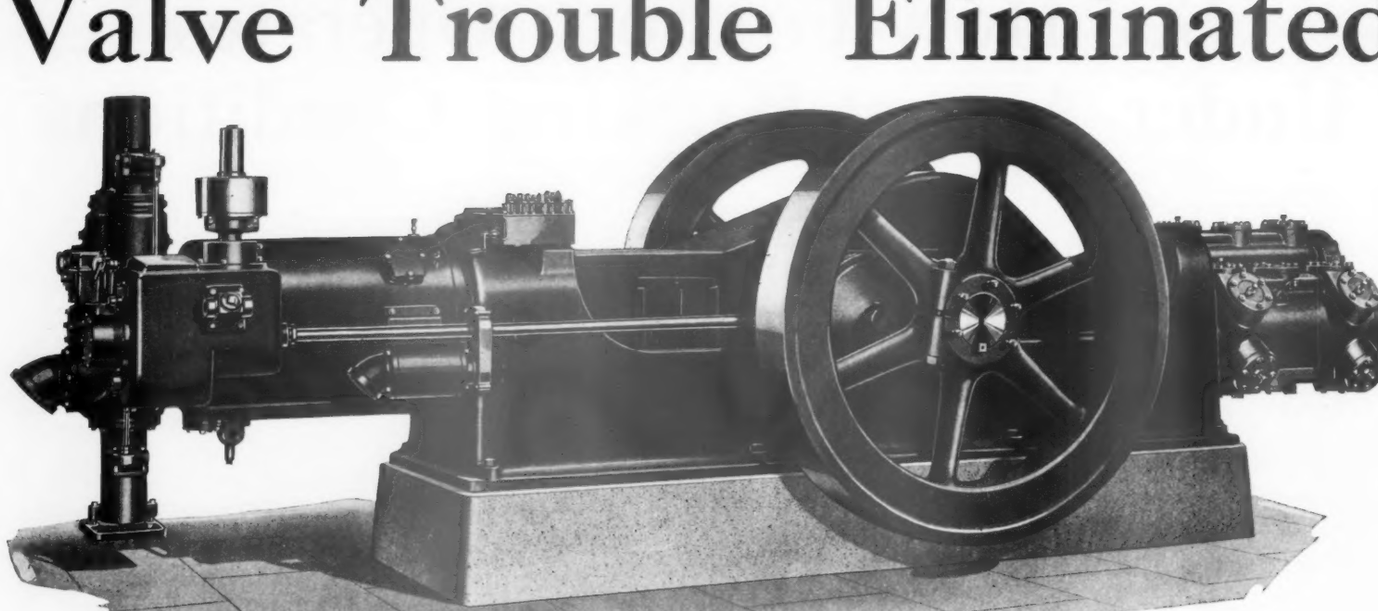

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oil and gas in 7 feet of sand at 2,259 feet.

Richland Parish

In Richland Parish, Oliver and Masters have begun another semiwildcat south of their recent successful completions in Section 2-15-5, which effected a southeast expansion of proven area, and are down around 1,000 feet with No. 1 Hatch heirs, 1,320 feet east and 1,250 feet south NW cor., Section 11-15-15.

Grier and others, who got considerable oil in No. 1 Bodcaw, Section 9-11-4, Winn Parish, about a year ago, have organized the Colvin Oil Co. and have location 200 feet south and 330 feet west NE cor. SW SW, Section 9-11-4, for No. 2 L. & A. In the Bodcaw test the oil showed up while they were drilling slightly below 1,000 feet and was thought to have been coming from a sand passed at around 700 feet but the source was never identified and the well was abandoned as a dry hole at 3,300 feet.

Harper and others drilling No. 1 Garland in the James Wagley Survey in Red River County, Texas, are shut down at 867 feet curing titles. Location is about 2 miles east of the town of Annona and 700 feet west of a well drilled several years ago by the Texas & Pacific Railroad for locomotive water and was abandoned when it began making considerable gas. W. B. McCormick and Sam Hunter, of Shreveport, have a considerable interest in the present wildcat, which is on a block of about 6,000 acres. Two miles east of Detroit in the same county, Johnson and others have a well making an estimated 4,000,000 to 5,000,000 feet of gas with a trace of oil and much salt water from 3 feet of hard sand at 1,256 feet. It is a cable tool job with 10-inch casing set at 1,100 feet for a test which proved dry at 1,253 feet, and 6⅝-inch is being run to cut off the water in the present sand. Clark and Melat, of Shreveport, are reported planning to drill 5 miles from the Harper test but location has not been made.

NORTH LOUISIANA

Bienville Parish

Borden and others' No. 2 L. & A., Section 1-15-8, is drilling at 1,450 feet. Humble Oil & Refining Co. is drilling lime at 2,850 feet, in No. 1 Anderson, Section 29-18-7.

Bossier Parish

J. R. Bahan has taken over the No. 1 Bollinger in Section 38-23-11, completed November 30, 1925, as a 40,000,000-foot gas well at 2,647 feet by Atlantic Oil Producing Co., and will deepen it to the 3,000-foot stuff. H. S. Goodwin's No. 2 Curtis, Section 36-17-13, remains temporarily abandoned at 3,257 feet; No. 3 Curtis in Section 2-16-13, began drilling April 17 and No. 1 McDade, Section 36-17-13, has rig up. Gross and others' No. 1 Stewart, Section 15-18-12, is drilling at 1,700 feet. D. P. Johnson's No. 1 Caddo, Section 13-17-13, is drilling at 700 feet. Triangle Drilling Co. is drilling No. 1 Bulkley, Section 9-20-13, at 1,951 feet.

Caddo Parish

J. T. Cox' No. 1 Hall, Section 7-15-16, is shut down at 1,107 feet. Empire Gas & Fuel Co. is drilling lime at 2,740 feet in No. 1 Nicholson, Section 33-17-14.

Caldwell Parish

Greenwood Production Co.'s No. 1 Caldwell Lumber Co., Section 27-13-5, is on a rock at 1,300 feet.

Catahoula Parish

Leonard Petroleum Co. is making a deep test of No. 1 Knott, Section 32-11-8, and is drilling at 4,110 feet. The Texas Company's No. 1 Tensas, Section 4-10-16, cemented surface string at 15½-inch casing at 195 feet.

DeSoto Parish

Gulf Refining Co. is drilling chalk rock at 1,460 feet in No. 35-A Jenkins, Section 35-13-12, and Williams and others' No. 1 Fortson, Section 4-12-11, set 60 feet of 10-inch surface casing and 737 feet of 6⅝-inch second string.

East Carroll Parish

Palmer Corp.'s No. 1 O'Brien, Section 7-19-11, is drilling at 1,383 feet. The Texas Company is drilling No. 1 Boone Live Oak Planting Co., Section 11-20-12, at 523 feet with 12½-inch surface string cemented at 163 feet.

Grant Parish

W. D. Ball and others are setting 915 feet of 8-inch casing to test 12 feet of sand in No. 3 Calhoun, Section 9-7-4, total depth 950 feet.

Lincoln Parish

H. M. Harrell's No. 1 Griffin, Section 17-19-1w, is in lime at 2,505 feet.

Monroe District

Morehouse Parish—Elbert Petroleum Co.'s No. 1 Morehouse Planting Co., Section 40-19-7, is drilling at 2,070 feet. Gulf Refining Co. fished out a bit and collar lost in No. 1 Higginbotham, Section 42-20-7, at 1,936 feet and is drilling at 2,060 feet; No. 1-A Ches Wymond in Section 7-18-6, has rig up ready to drill. United Carbon Co. failed to get gas in either the upper or lower Monroe horizons in No. 1 Bastrop Pulp & Paper Co., Section 18-21-6, and has cemented 6-inch casing at 2,409 feet.

Ouachita Parish—Phillips and others have 8-inch casing cemented at 820 feet in No. 1 School fee, Section 16-16-4. Pioneer Oil & Gas Co. has made location for No. 1 Nolan, 215 feet north and 1,146 feet east of the westerly corner of irregular Section 17-18-4. Southern Carbon Co. has location 660 feet north and east SW cor., Section 34-20-4, for No. 9 Fairbanks and is drilling No. 50 fee, Section 18-19-4, is drilling at 2,020 feet. J. P. White's No. 1 Schmidt, Section 3-15-4, is reaming to bottom, total depth 2,530 feet.

Union Parish—Carter & Goodwin's No. 1 Hudson, Section 7-23-1e, is drilling at 1,750 feet.

Rapides Parish

Collins Brothers' No. 1 Allen, Section 25-5-1w, has been drilled to 3,000 feet contract depth and is shut down waiting orders at 3,010 feet without having had a show of any sort. Glenmore Petroleum Co.'s No. 1 fee, Section 1-2s-2w, is drilling at 3,680 feet.

Richland Parish

Gulf Refining Co.'s No. 1 Millsaps, Section 8-17-6, is drilling at 3,405 feet. Moody & Seagraves' No. 1 McDonald, Section 9-15-15, is drilling at 2,647 feet. Woodley Petroleum Co.'s No. 1 Osborn, Section 3-17-7, is shut down waiting orders at 3,131 feet.

Sabine Parish

R. L. Gay's No. 1 Mansfield Lumber Co., Section 15-7-14, is drilling at 2,440 feet. Zwolle Oil & Gas Co.'s No. 7, Section 14-7-14, is drilling at 3,830 feet.

The Texas Company's No. 1 Hamlin, Section 28-10-13, is drilling hard chalk at 1,921 feet.

Winn Parish

Colvin Oil Co. has made location 200 feet south and west NE cor., Section 9-11-4, for No. 2 L. & A.

ARKANSAS

Bradley County

Hurley and others have begun work on their No. 1 Southern Lumber Co. in Section 26-15-10, and have surface casing, 10-inch, cemented. Johnson and Adams' No. 1 Southern Lumber Co., Section 12-12-12, is drilling a rock at 3,170 feet.

Dallas County

Decman and others' No. 1 Hillman, Section 20-10-13, is shut down at 1,500 feet.

Miller County

Dave Bruton and others' No. 1 Red River Farms, Section 2-17-26, is drilling at 2,915 feet in sand rock and Lenz and others' No. 3 Dale, Section 23-15-26, is shut down at 3,000 feet.

Pope County

Natural Gas & Fuel Corp.'s No. 1 Wharton, Section 7-8-21, is drilling at 3,948 feet.

Ouachita County

Timberlake and others have set 100 feet of 10-inch surface casing in No. 1 Carnes, Section 27-13-17, and are drilling at 1,240 feet.

Union County

W. R. Keever has rig up for No. 6-A Ezell in the SE cor. NE. Section 12-17-15; No. 3-B Ezell in the same section is bailing with 50 feet of oil in the hole from 4 feet of sand, total depth 2,129 feet. Lion Oil Refining Co. has derrick pattern on location for No. 1 Nash, Section 6-17-13. J. O. Moore is arranging for a drill stem test of No. 1 Pagan, Section 18-18-11, at 2,634 feet. Rhodes and others' No. 1 Union Saw Mill, Section 14-19-11, is washing to bottom, total depth 2,670 feet. Simon and others have begun drilling No. 1 Jerry, Section 21-17-14, and have 10-inch surface string cemented at 92 feet.

NORTH LA.-ARK.

(Continued from Page 53)

in the B. C. Jordan Survey gauged 3,138,000 feet of gas at 978 feet.

Sale of a 40-acre lease in the Hosston district of Caddo Parish north of Pine Island for $25,000 was recorded during the week, Luby Oil Co. transferring its Caddo Levee Board lease, being the SW NW Section 23-22-15, to Bayou State Oil Co., together with wells and all equipment for $2,250 cash and 15-months note for the remainder.

NORTH LOUISIANA

Bossier Parish

Cartersville—J. R. Bahan has cemented 6-inch casing at 3,040 feet on No. 1 Kilgore, Section 31-23-11, and Magnolia Petroleum Co. cemented 8¼-inch at 3,074 feet on No. 1 Matlock, Section 25-23-12. Natural Gas Products Co.'s No. 1 United States Government, Section 31-23-11, cemented 9¼-inch for second string at 740 feet. Northwest Louisiana Gas Co. is arranging to deepen No. 2 Bollinger, Section 37-23-11, completed December 13, 1926, as a 10,000,000-foot gasser at 2,641 feet. The Texas Company has 6¼-inch casing cemented at 3,069 feet on No. 2 Rose, Section 21-23-11.

Elm Grove and Sligo—Ellis & Markley are setting 6-inch casing at 1,900 feet on No. 5 Hunter, Section 14-16-12. Olmeda Gas Co. has made location 500 feet east and 200 feet north SW cor. SE, Section 30-16-11, for No. 1 Mayer. Palmer Corp. is in shale at 1,820 feet on No. 10-B Caplis, Section 25-16-12. R. O. Roy has made location for No. 1 Caplis in Section 25-16-12. Sligo Syndicate's No. 2 Skannal, Section 14-17-12, began drilling April 14 and is drilling at 1,125 feet with 10-inch surface string cemented at 105 feet.

Caddo Parish

Greenwood—Belchic & Laskey's No. 4 R. T. Sharp, Section 10-18-16, is drilling at 2,000 feet. Greenwood Production Co.'s No. 1 Cushman & Bridges, Section 15-18-16, cemented 6-inch casing at 883 feet, total depth 900 feet. Gross and others' No. 1 Baker, Section 35-17-16, is arranging for drill stem test at around 850 feet. Magnolia Petroleum Co.'s No. 2 Bell, Section 4-17-16, is coring lime at 3,025 feet.

Oil City—Dobson and others' No. 7 Rives, Section 5-20-16, is shut down at 1,920 feet. Shreveport Oil Corp.'s No. 3 Muslow, Section 32-21-15, is drilling at 1,100 feet.

Pine Island—Bayou State Oil Co. has cemented 6-inch casing at 2,203 feet on No. 1-C Jolly, Section 27-22-15. Dixie Oil Co.'s No. 91 Dillon, Section 14-21-15, is waiting on standard rig to pump at 2,702 feet; No. 92 Dillon in Section 13-21-15, is reaming to bottom, total depth 4,382 feet with broken formation from 4,340 feet. Magnolia Petroleum Co. tested salt water at 4,039 feet on No. 8-A Hampton, Section 15-21-15, and is going deeper; No. 22 Robertshaw, Section 22-12-15, is in red shale at 4,003 feet. Simms Oil Co.'s No. 1 Glassell, Section 23-20-15, cemented 6⅝-inch casing at 2,206 feet. Simplex Oil Co. is bailing to test No. 3 Baird, Section 22-20-15, with 6⅝-inch casing cemented at 2,200 feet, total depth 2,265 feet.

LaSalle Parish

Urania—H. F. Taylor is drilling below 600 feet on No. 7 Urania, Section 19-10-2e, with 10-inch surface string cemented at 100 feet.

Monroe District

Morehouse Parish—Southern Carbon Co. has derrick up for No. 1 Davis, Section 21-20-4. United Carbon Co.'s No. 1 Davis, Section 21-20-4, is waiting for 6-inch plug to set at 2,088 feet.

Ouachita Parish—Jordan Drilling Co.'s

Something Better:
drill pipe *with* bearings made of rubber

Mud is a perfect lubricant for rubber. Bettis Casing Protectors, of special rubber composition, offer a perfect bearing surface on the drill pipe, preventing the joints and collars from contacting to casing. Easier to rotate, save power, prevent excessive wear and pay their cost hundreds of times in every well.

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Announcement

The Braden interests desire to announce that the Derrick and Steel Building Departments of the BRADEN STEEL & WINCH COMPANY are now being conducted as a separate corporation, under the name of the

BRADEN STEEL CORPORATION

The manufacture and distribution of

BRADEN FABRICATED STEEL BUILDINGS

BRADEN SECTIONAL STEEL BUILDINGS

BRADEN LOCK-JOINT STEEL BUILDINGS

and

BRADEN CLAMP-JOINT STEEL DERRICKS

will be continued under the new name.

Write for full particulars on any of the above products.

BRADEN STEEL CORPORATION

Tulsa, Oklahoma

(Formerly a division of the Braden Steel & Winch Company)

No. 1 Cole, is a rig 970 feet south and 319 feet east NW cor., Section 50-18-4. Montgomery and others have a fishing job at 1,881 feet on No. 1 Johnson, Section 30-19-4. Palmer Corp.'s No. 4 Kate Cole, Section 26-20-4, cemented 8-inch at 815 feet. Pioneer Oil & Gas Co. is drilling No. 1 Filhoil, Section 11-18-4, at 2,000 feet. Southern Carbon Co. has location 660 feet north and 580 feet east SW cor., Section 34-20-4, for No. 9 Fairbanks; No. 50 fee, Section 18-19-4, is drilling at 2,020 feet.

Union Parish—Industrial Gas Co.'s No. 1 Lewis, Section 14-20-3e, has 2,168 feet of drill stem stuck in the hole and No. 1 Simpson, Section 9-20-3e, has cemented 8-inch casing at 901 feet.

Richland Parish

Dixie Oil Co. is bailing to test No. 1 McCoy, Section 29-16-6, at 2,454 feet. W. C. Feazel is drilling 6-inch plug on No. 1 Noble, Section 26-16-5, at 2,283 feet and Feazel & Hemler cemented 8-inch casing at 855 feet on No. 1 Pardue, Section 21-16-6. Gulf Refining Co.'s No. 3 Rhymes, Section 28-17-6, is drilling lime rock at 3,145 feet. Moody & Seagraves 1-B Sartor, Section 9-16-6, is drilling at 1,200 feet. Natural Gas & Fuel Corp.'s Nos. 3-C and 4-C Thompson, Section 21-16-6, are pumping water into No. 1 Thompson crater, at 2,405 feet. Oliver & Masters have made location for No. 1 Hatch heirs, 1,320 feet east and 1,250 feet south NW cor., Section 11-15-5, and have cemented 15½-inch surface casing at 130 feet on No. 1 J. K. Morrison, 1,300 feet south and 660 feet east of the C of Section 2-15-5, which began drilling April 15. Ruston Drilling Co.'s No. 1 Mulhern, Section 19-16-6, has 6-inch cemented at 2,297 feet and is drilling No. 1-B Sartor, Section 9-16-6, at 2,040 feet. Southern Carbon Co. cemented 6-inch at 2,280 feet on No. 1 D. R. Sartor, Jr., Section 9-6-6.

Sabine Parish

Magnolia Petroleum Co.'s No. 1-B Hall, Section 33-10-12, cored shale at 2,710 feet.

Webster Parish

Cotton Valley—Dixie Oil Co. has rig up for No. 1 Cox, 610 feet north and west SE cor. SW, Section 15-21-10. Humble Oil & Refining Co.'s No. 2-A Bodcaw is a rig; No. 6 Davis, Section 14-21-10, is drilling at 2,485 feet and No. 2 Webb, Section 14-21-10, is in lime at 3,682 feet. Louisiana Oil Refining Corp. has rig up for No. 5 Crichton, 660 feet north and east SW cor. SE NE, Section 21-21-10, and is arranging to deepen No. 1 Davis in Section 23-21-10, completed a year ago as a 5,000,000-foot gas well at 4,371 feet. Magnolia Petroleum Co. is bailing to test No. 1 G. W. Cole, Section 27-21-10, at 4,729 feet and No. 1 D. G. Cox in Section 22-21-10, was in gyp at 4,603 feet; No. 5 Willis Cox is a location 660 feet north and east SW cor., Section 15-21-10, and No. 1 Mixon, Section 22-21-10, is milling junk at 4,347 feet. Ohio Oil Co. has rig up for No. 39 Bodcaw, Section 15-21-10, and for Nos. 40 and 41 Bodcaw, in the same section. No. 1 Haynes is a location in the C NW NE, Section 30-23-9. Palmer Corp.'s No. 1 Mixon, Section 22-21-10, is drilling at 1,735 feet. Woodley Petroleum Co. has begun drilling No. 1 Lewis, Section 15-21-10.

ARKANSAS

Union County

Champagnolle — Arkansas Drilling Co. has rig up for No. 1 Carroll, Section 1-17-14, and is drilling No. 1 Rowland, Section 15-17-14, at 1,675 feet with 12½-inch surface string cemented at 152 feet. H. M. Johnson's No. 1 Kelly, Section 9-17-14, is a derrick. Magnolia Petroleum Co. has made location 300 feet south and 600 feet west NE cor. SE NE, Section 1-17-14, for No. 3 Carroll and C. E. Murdock has rig up for No. 2 J. N. Gregory, 225 feet west and 150 feet north SE cor. NE SE, Section 10-17-14. Ohio Oil Co.'s No. 2 W. Pumphrey, Section 1-17-14, is a rig. Pure Oil Co. has derrick up for No. 2 E. W. Gregory, 200 feet north and east SW cor., Section 11-17-14, and No. 3 Gregory is a location 150 feet south and east NW cor. SW SW, Section 11-17-14. Rushing and others tested 300 feet of salt water standing in the hole at 2,751 feet in No. 1 E. F. Gregory, Section 11-17-14, and are going deeper. Timberlake and others have rig up for No. 1 Dumas, Section 11-17-14.

Smackover—Lion Oil Refining Co.'s No. 8 Hays, Section 4-16-15, has 6⅝-inch casing cemented at 2,336 feet and at 2,466 feet on No. 7-C Murphy in Section 8-16-15.

Ouachita County

Stephens—Buffalo Oil Co. has location 350 feet south and east NW cor. NW, Section 22-15-19, for No. 1 Laughlin.

Smackover—Little Fay Oil Co.'s No. 6 Robertson, Section 25-15-16, is waiting on standard rig with 400 feet of fluid 50 per cent water standing in the hole from 37 feet of broken sand, total depth 2,067 feet, and No. 7 Robertson in the SW cor. NE NW, same section, is rigging up. Ohio Oil Co.'s No. 7 Cramer, Section 22-15-16, is coring at 3,175 feet. Sinclair Oil Co.'s No. 7-A Berry, Section 33-15-15, is drilling at 2,616 feet after a drill stem test at 2,541-69 feet showed a little gas. Skelly Oil Co. has rig up for No. 10 Umstead in the C Section 33-15-15.

EAST TEXAS

Cass County—Hickman and others are drilling No. 1 Mott in the Ambrose Douthit Survey at 2,646 feet.

Harrison County—Magnolia Petroleum Co.'s No. 1 A. G. Vincent, R. W. Bedford Survey, is coring at 2,367 feet.

Panola County—S. H. Gardner and others' No. 3 Cavin, B. C. Jordan Survey, is drilling at 1,603 feet. Lewellen & Hasenfuss' No. 1 T. Hill, E. F. Mitchesson Survey, is drilling at 1,800 feet. Magnolia Petroleum Co.'s No. 1 T. C. Adams in the J. M. Birdsong Survey, cored gray lime at 2,430 feet; No. 1 Martha Richardson, Benson Lovell Survey, cored hard chalk at 1,766 feet; No. 1 Leigh Trosper, B. Stevenson Survey, is drilling shale and lime at 2,490 feet and No. 1 S. R. Vance in the Jacob Womack Survey, is in chalk at 1,358 feet. Natural Gas Products Co. began drilling No. 5 T. C. Adams in the Evans Brackens Survey, April 11 and is drilling at 800 feet with 10-inch surface string cemented at 102 feet and 6-inch at 972 feet; No. 3 Roquemore in the B. C. Jordan Survey, is drilling at 1,400 feet. M. H. Smith and others' No. 2 W. C. Agurs in the Jacob Womack Survey, is drilling at 1,000 feet. The Texas Company set 40 feet of surface casing and is drilling at 700 feet on No. 3 G. W. Brumble in the Evans Brackens Survey.

KANSAS FIELDS

(Continued from Page 48)

tion 22-17-4, is drilling deeper at 2,679 feet. Frank and Phillips Petroleum Co.'s No. 1 Bott, SW cor. NW NW, Section 9-19-4, is drilling at 500 feet.

Crawford and others' No. 1 Weston, NE cor. NW SW SE, Section 14-17-4, is dry and abandoned at 2,430 feet. Braden, McClure and others' No. 1 Folks, NW cor. Section 23-17-4, is dry and abandoned at 2,462 feet. Sunray Oil Co and others' No. 1 Lehrman, SW cor. NE SE, Section 1-21-1, is a dry hole at 3,342 feet.

Marshall County

Marshall Oil Syndicate's No. 1 Finn, NW cor. NE NE, Section 4-4-7, is dry and abandoned at 2,640 feet.

Mitchell County

Gurley and others' rig is up for No. 1 Abercrombie, C NW NE, Section 32-9-7w.

Sumner County

Roxana Petroleum Corp made location for No. 6 Shore, SE cor. SW SE, Section 24-31-2. Location was also made for No. 6 Wiles, NE cor NW NE, Section 25-31-2. The rig is being erected for No. 5 Sleigh, SE cor. NW NW, Section 36-31-2. A machine has been moved out for No. 12-A Emerich, Tract 5, Oxford Townsite, Section 14-32-2. Wasson and others' machine is on the location for No. 9 Gassoway, SW cor. SE SW, Section 14-32-2. Ramsey and others' No. 1 Bailey, NW cor. SE, Section 22-32-2, is rigging up. Dickey and others made location for No. 1 Knox, SW cor. NE, Section 3-35-1w. The Prairie Oil & Gas Co is moving in tools for No. 1 McIrvin, NW cor. SW NE, Section 3-35-2.

Noble and others' No. 1 Sheak, Tract 4, Oxford Townsite, Section 14-32-2, is dry and abandoned at 2,197 feet. Roxana Petroleum Corp.'s No. 3 Rothwell, SW cor. NE SW, Section 14-32-2, made 750 bbls. after a shot of 180 quarts in sand at 1,983-2,101 feet. Ramsey and others' No. 1 Caldwell, C E half NE NE, Section 22-32-2, has been completed for 400 bbls. in sand at 2,125-61 feet.

Morris County

Graham and others' No. 1 Nelson, NE cor. SE, Section 30-17-5, has been completed for 30 bbls. in sand at 2,294-2,380 feet.

Rooks County

Findiess and others erected the rig for No. 1 Catudal, NW cor. SE, Section 23-10-19w.

Saline County

Kano Petroleum Corp. made location for No. 1 Helm, C NE Section 29-16-3w.

Sedgwick County

Western Oil Corp. made location for No. 1 Howard, NE cor. SE, Section 29-29-2.

Wilson County

Thompson and others' No. 1 Robertson, SW cor. NE, Section 21-27-14, is drilling at 800 feet.

Chances That Advance In Oil Country Goods May Be Undertaken

By B. E. V. Luty

PITTSBURGH, Pa., Apr. 23.—Requirements for standard pipe are increasing slowly with the progress of spring. Actual demand upon the mills is considerably heavier this month, as the advance in prices at the beginning of the month brought about an extra demand, jobbers generally being allowed to cover for the month at the old prices, some having a chance to cover for two months. Specifications were required to be filed promptly, for shipment at mill convenience, and thus the mills have been shipping more heavily. As a large part of the standard pipe business is now handled on a consigned basis, the mill owning the pipe in the jobber's warehouse and fixing the sale price, the jobber receiving what amounts to a commission, the price advance had less effect in stimulating movement than would have been the case if all the pipe were sold direct by mill to distributor. The advance, as reported a fortnight ago, was made by dropping one five from the preferential discounts.

There are chances that an advance in oil country goods will be undertaken but there is nothing definite on this and mills do not admit that there is a probability.

Pipe mills have only a moderate amount of line pipe business on books, but they do have some. Various small orders have been booked quietly. The Amarillo-Kansas City natural gas line seems quite likely to be laid, and the pipe may be ordered from mill almost any time.

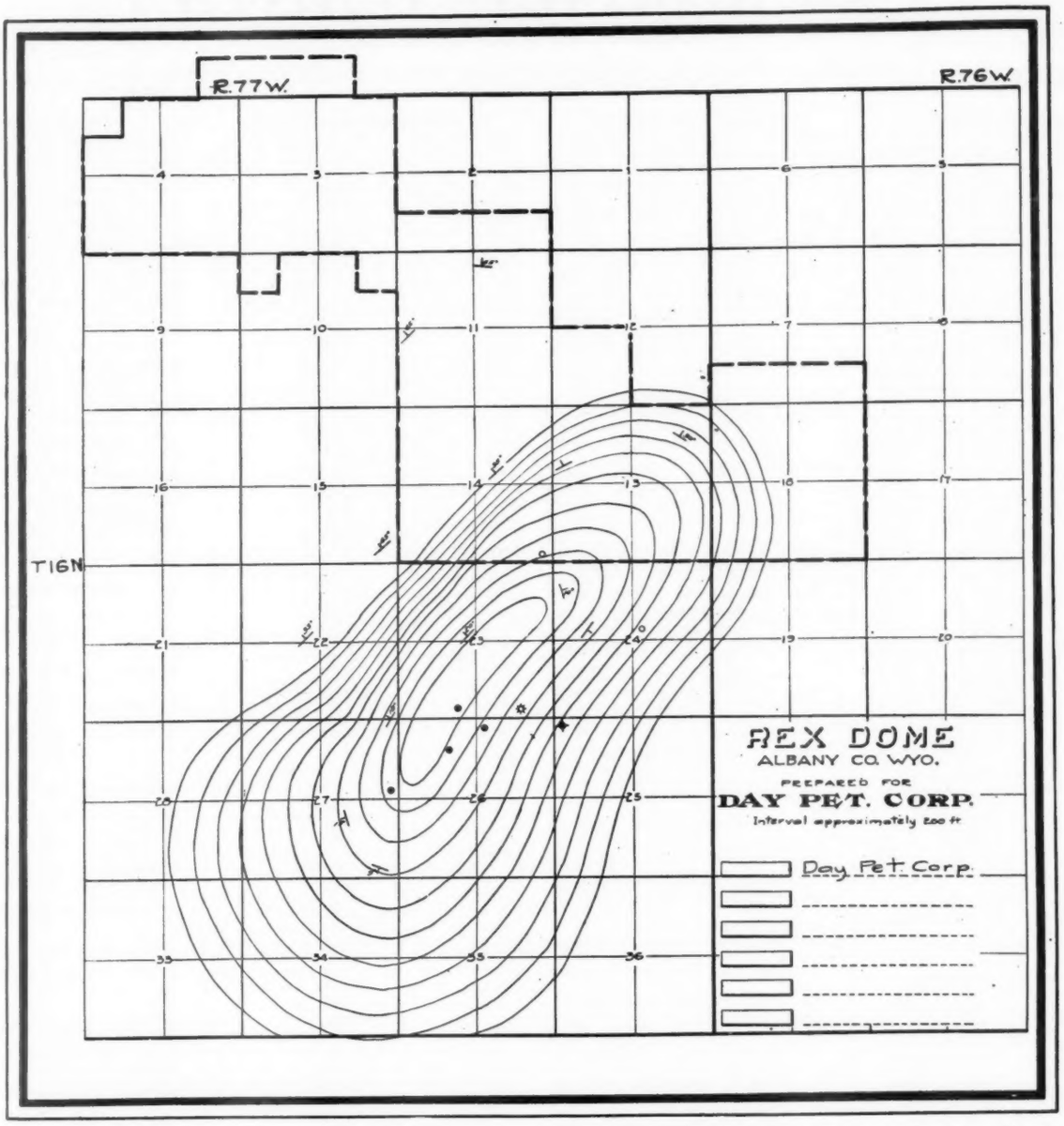
Pipe mills are estimated to be running at an average above 60 per cent, so that they are doing better than in March, when the rate was below 60 per cent.

The steel industry as a whole is maintaining its operating rate quite well, production being substantially as heavy as in March. Thus it makes a good showing for the time of year, since in every year for four years past there was a decrease from March to April, amounting to 5 per cent in 1927 and 1926, and to more than that in the two preceding years. There is sure to be a decrease for the summer, as there always has been, and there is no disposition to predict that the decrease will be smaller this year than in other years.

Automobile production continues to run well above that of a year ago. Railroad buying is rather light, and general, and an occasional large order does not count for much. Thus the Chicago, Milwaukee, St. Paul & Pacific has ordered 4,450

(Continued on Page 143)

PROVEN ACREAGE



The Rex Lake Dome is located in the Laramie Basin, Wyoming, about ten miles from the town of Laramie.

The structure, as indicated on the above map, is already proven as an oil producer. The Ohio Oil Company is operating the lease covering the major part of the fold and have found four sands to contain oil in commercial quantities. The oil is good quality and finds a market at the town of Laramie. A pipeline is completed to the Ohio lease from the railroad.

A standard rig and about twelve hundred feet of hole is completed on the southeast quarter of section fourteen. This rig can be purchased at a small portion of its cost.

Section fourteen is a state lease carrying a royalty of sixteen per cent. We will turn over the S.E. quarter of section fourteen together with the hole already completed for a small cash bonus, and a contract to complete the well to 3,700 feet or production at shallower depth.

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BATTERY OF 2—300 H.P. each, Atlas Water tube boiler, each with 120-4" x 18' tubes, 2-36" Diam. x 84" drums, 1-24" diam. x 84" drum, full flush front, Wright water columns steam gauge, safety and blowoff valves and all auxiliary fittings, oil for fuel. Mfd. by The Atlas Engine Works, Indianapolis, Ind.

Battery of 2—350 H. P. each Heine Water tube boilers, each 202-3½"x18' tubes, 4-36"x18' horizontal steam drums, full flush front, with water columns, steam gauges, safety and blowoff valves, and all auxiliary fittings, oil for fuel. Mfd. by Heine Safety Boiler Works, St. Louis, Mo.

350 H. P. Heine Water tube boiler, 202-3½"x18' tubes 2-36"x18' Horizontal steam drums, full flush front with water columns, steam gauge safety and blowoff valves, and all auxiliary fittings, oil for fuel. Mfd. by Heine Safety Boiler Works, St. Louis, Mo.

9—150 Horse Power Shell Return Tubular Boilers, Erie.

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10—6-in. standard rigs.

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75,000 ft. 3-in. used line pipe.
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5 Dean Triplex Pumps, 5 by 8.
1 No. 2, 1 No. 5, 1 No. 6, 2 No. 7, 1 No. 10, 1 No. 11, 1 No. 12 Sweetland Oil Filters.
Two 10-inch S. Roturbo Centrifugal Pumps. Six 10-inch S. Centrifugal Pumps. Steam Turbine.
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Little Rock, Arkansas

NOTICE OF SALE OF OIL DRILLING MACHINE AND OUTFIT

On account of illness I am compelled to give up my former business as a driller of oil and gas wells. By reason thereof I am placing my Parkersburg Drilling Machine and outfit for the drilling of oil and gas wells upon the market for sale. The outfit is complete; when bought new the invoice price was $8,000.00 it has been carefully handled and well cared for, has drilled from 15 to 18 wells at a depth of about 1,200 ft.; it is in first class condition, anyone desiring to become the owner of a good outfit for the drilling of oil and gas wells should not fail to examine the same. At the present time it is located on the Campbell farm three miles east of Bryant, Indiana.
Phillip J. Schilling, Ft. Recovery, Ohio.

FOR SALE—Kahlenberg Engine, 3 Cylinder, 75 HP. in good condition, operates on kerosene or gasoline $400. H. E. Quick, 700 N. Green St., Chicago, Ill.

FOR SALE—35 H.P. Tico gas-engines, with reversible clutch, splendid condition. Box 877, Sapulpa, Okla.

COMPLETE DRILLING RIG. Johnson recent model. First class condition. Located East Texas. Includes also fishing tools, line pipe, tanks, everything essential for wild-cat development. Address S. S. Raymond, Lamar Hotel, Houston, Texas.

FOR SALE—EQUIPMENT

125 KVA A. C. Gentr. 3 Phase, 60 Cycles, 2,300 Volts to Fairbanks Morse 3 Cylinder Type Y Oil Engine, 257 RPM. 170 KVA A. C. Gentr. 3 Phase, 60 Cycles, 2,300 Volts to Fairbanks Morse 4 Cylinder Style V Oil Engine, 257 RPM. In first class condition.
ARTHUR S. PARTRIDGE,
417 Pine St., St. Louis.

FOR SALE OR TRADE—Large quantities of reconditioned pipe, casing, engines, boilers, drilling tools and other oil and gas well supplies, always carried in stock. Write for our list, we can save you money. LEE MORRISON SUPPLY CO., Bartlesville, Okla.

TANKS

Dismounted tank car tanks, first class condition, priced to move quick. Alsa 5x9 and 10x10x30 feet yellow pine car sills cheap. Carnes Equipment Co., Sand Springs, Okla.

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RECONDITIONED or new heat exchangers, stills, fractionators, absorbers, condensers at cut prices. Plants designed any size for any use. W. F. Pyne, 909 S. Ardmore Ave., Los Angeles, Calif.

FOR SALE

½ ton Model K-41 G. M. C. Truck and trailer.
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Above trucks and trailers in A-1 condition and a real bargain if taken at once. Phone 159, Box 116, Mounds, Okla.

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Lands with good geology our specialty. Send us your blocks with full information, description, geological reports and your proposition.
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THE OIL AND GAS JOURNAL

Tulsa, Oklahoma

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27,000 ACRE Ranch, well watered, favorably located; surface value alone worth the price asked. W. T. Bishop, Winona, Kans.

CLASSIFIED advertisements in this section ro pay well in money and in extended business relations. This has been proven by the continual advertising that we receive from the men in the oil industry, everywhere.

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FOUR DWELLINGS, Restaurant building, 14 lots in Herrick. Trade for oil or mineral land or Leases. W. E. Beck, Herrick, Ill.

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WANTED—Responsible laboratory man in 2,500 barrel refinery. State experience, references and salary. Box C-363, The Oil and Gas Journal, Tulsa, Okla.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

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MAIL your advertisement now. It will be published next week. Cash with order.

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5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

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Compute white space at the above rates.

Mail your advertisement to

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

REFINERY SUP'T.—Ten years' experience, will be at liberty May 1. Know all kinds of equipment, including pipe stills, Coast, Cross, Jenkins and Holmes-Manley cracking processes. Domestic or foreign service. References. Box C-345, The Oil and Gas Journal, Tulsa, Okla

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GREASE CHEMIST, single, with 6 months experience in the laboratory and 2 years experience in grease and soap manufacturing. Also have general knowledge of oil refining. Desires permanent position with oil company. Go anywhere. References. Box C-362, The Oil and Gas Journal, Tulsa, Okla.

CHEMICAL ENGINEER graduate, employed, married; 2 years refinery experience, 6 months general training course, 6 months engineering department, 1 year research chemist, desires change. Address Box 1133, Eldorado, Kans.

GEOLOGIST — Five years' experience major company in South America, Texas, wants position with independent company in Texas. Can take charge of subsurface geophysics, leasing, detail geology. Well acquainted in Texas and can give best references. Box C-344, The Oil and Gas Journal, Tulsa, Okla.

LEASES—PRODUCTION

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Solid block of twenty thousand acres in central Jeff Davis County. Ten year commercial. Between two drilling wells. New Lease. Will sell one section and up for 30 cts. per acre. 10 ct. rental. W. E. Priddy, Owner, Wichita Falls, Texas.

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LEASES—PRODUCTION

WATCH THE PAGE preceding the classified section for good drilling propositions.

FOR LEASE—Oil & Gas, 60 acres, Section 11, T. 16, R. 10, Creek County, also 100 acres Section 9, T. 16, R. 10, Creek County. Address owner J. H. Fitt, D-1361, San Diego, Calif.

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WATCH DEVELOPMENT and higher prices working North along Eastern edge of New Mexico. Can sell leases large or small tracts in Roosevelt, Quay and Union Counties at $.50 per acre. This has a chance to increase several times within a year. Owner 635 First Nat. Bank Bldg., El Paso, Tex.

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LEASES—PRODUCTION

MAKE MORE MONEY THIS YEAR

We have large natural gas production proven leases and royalties. We need cash for expansion. Will sell undivided interest in a combined property or will sell production, leases or royalties separate. This is high-class property offered at a very low price. Firm entirely reliable and the owner of the property. Reference: Any Bank or Chamber of Commerce this city. If you desire to buy or handle anything in the lease, royalty, production or blocks for development in the best fields —write us.
COMMERCE DEVELOPMENT CO.
First Nat'l Bank Bldg.,
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WILL SELL 14,000-acre lease, complete rig and drilling tools 6,200 feet casing for $14,000 cash to anyone contracting to finish a 3,500-foot test in hole now down 2,400 feet. Four excellent geological reports. E. S. Rudd, Hotel Angelus, El Paso, Tex.

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LEASES—PRODUCTION

FOR SALE — Leases, Oil Production, Asphalt, Limestone and Other Mineral Lands. W. P. Harley, Bowling Green, Ky.

RIGHT IN THE BIG PLAY
TEXAS COUNTIES

Presidio, Brewster, Jeff Davis, Pecos. Cheap Commercial leases and royalties. Cheap rentals. 10 year leases. Land in fee. Large and small tracts. LOTT AND TRAMMELL, 409 Fort Worth National Bank Bldg., Fort Worth, Texas.

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I have for sale large or small amounts of States Leases in Chaves and Eddy Counties, New Mexico. Full co-operation on cash or installment sales. Beecher Rowan, Artesia, New Mexico.

IDAHO

The big play is on. The major companies are blocking. Wells drilling. Good prospective acreage mostly leased. Our leases Producers' 88, 5 year, no rental first 2 years, thereafter, 25c per acre; $5.00 will secure a 20 acre lease for you. Now is the time, get in early—you know the possibilities. Reference, First National Bank, this city. Richard W. Stevens, Box 114, Blackfoot, Idaho.

ROYALTIES—PRODUCTION

BUYERS AND SELLERS of Mid-Continent oil Royalties. Inquiries invited. Joe P. Crawford & Co., Petroleum Bldg., Oklahoma City, Okla.

ROYALTIES WANTED — Cash for producing royalties, any size, priced right. Write description, full details and price. P. O. Box 1359, Tulsa, Okla.

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80 ACRES ROYALTY $10, 40 acres protection in two locations. Resale service, drilling bulletins, location reports, field news. National Royalties, Box 1214-B, Wichita Falls, Tex.

PRODUCING and close-in royalties, Winkler County. Write for list 16. National P & R Company, Box 1214-B, Wichita Falls, Tex.

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If you wish to buy or sell Leases or Production, use the Classified Section

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SPECIAL
4" O. D. GAS LINE
16 MILES LONG
Welded in 35' lengths
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IF YOU buy or sell royalties, leases, or production you should not overlook The Oil and Gas Journal Classified Wants. They comprise the best medium of exchange available to you.

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LEASES: 1,280 acres, 10 years, 25c annual rental. These are superb buys, right in the play, due southwest and not far from a major drilling operation. Will sell all or any part of either. Usual courtesies to brokers.

E. L. STRATTON,
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Fort Worth, Texas.

FOR SALE—2½ acres producing royalty. 28-18-4w, Logan County, Okla. $1,050. E. E. Freeman, Eagle-News, Enid, Okla.

FOR SALE—Royalties, Leases, Solid Blocks of acreage in different parts of Kansas oil fields. H. R. Hurd, Chase, Kans.

Fair Gasoline Demand in Chicago Area

Week-End Business Reported Exceedingly Good. Many Inquiries Being Received. Bulk Sold at 6⅞ Cents

By J. B. Waldo

CHICAGO, Apr. 23.—The market as a whole was quiet on Monday, a condition not unusual so near the end of the month. Gasoline was in fair demand with a few rush orders received from dealers who reported that they had an excellent week-end, doing a large business. There was a good deal of inquiry for May delivery both from dealers and for resale, but refiners generally refused to quote for more than the remainder of the month. The demand was for the U. S. Motor grade and the great bulk of the business was placed at 6⅞ cents, some refiners advancing to that price who had been selling at 6¾ cents. One of the large Group 3 refiners reported the sale of 625 cars of U. S. Motor gasoline for shipment by way of the Gulf to Bayonne. The price paid was not disclosed, but reported in the market to have been 6⅝ cents.

Kerosene Stocks Small

Natural gasoline was very firmly held by refiners.

Kerosene was in demand, but business for immediate delivery was restricted by the fact that at the plants of the leading sources of supply, even where they have stocks, they are small and are being held for their regular trade. The demand for furnace oils was very light. Gas oil was very firm, the U.G.I. specifications being held as a rule at 2⅝ cents for new business. A number of inquiries were received for May deliveries.

Fuel Oil Easier

In heavy fuel oils there was an easier market with several refiners reducing their prices on the 24-26 gravity and below 5 cents a barrel on the ordinary cold tests. Present demand was only fair, but several of the large consumers asked for prices over the first half of May. Many of these large buyers are now placing orders for half-month periods, while the smaller buyers of car lots are ordering when they need supplies. Several of the local distributors of fuel oils have started a price war on the heavy grades, one dealer quoting a price of 4½ cents on the 18-22 gravity and for spot delivery, while another large concern has made a quotation of 5 cents a gallon for delivery of this gravity up to November 1.

The larger gasoline distributors in this territory report their gallonage for April is still ahead of last year and they look for an improvement in the weather and road conditions over the remainder of the month. They state that all that is now needed for an active demand from consumers is the right kind of weather.

Market Shows Optimism

There was a great deal of optimism in this market last week although the gasoline business was rather light. This frame of mind was directly traceable to the fact that during March when the weather was favorable the gasoline consumption had been much larger than a year ago at the same time and tank car sales correspondingly good. Since the first of this month one storm has followed another in rapid succession, the weather has been cold, hard frosts have not been uncommon and much of this territory has been blanketed with snow. Many times has the statement been made, "Just give us 10 days or two weeks of really fair weather and the demand for gasoline will be better than it was in March."

In the meantime distributors have been surely if slowly disposing of the supplies ordered for early April delivery and while there has been no shortage of gasoline in the dealers' tanks, it is known that many of them could take in gasoline if the demand were active from their customers. Under the existing conditions for the use of the auto, the dealer quite naturally hesitates to place orders for additional supplies but just as soon as the weather brightens he has a reason for preparing for the business that must come.

Almost complete reversal of conditions is noted in the gasoline market in Ohio and other differential points. For months the prices at which gasoline could be bought delivered at their sidings by distributors in Ohio, eastern Michigan and parts of other states to the east of this city, were so low that a Group 3 refiner was obliged to quote prices that seemed almost like giving the gasoline to the buyers, if he wanted any of his business.

Last week sales of gasoline for delivery in Ohio were made by local representatives of Group 3 refiners at the same price they were quoting for other parts of the territory. One refiner in this state who had been unable to sell in Ohio for months, tried offering at 6½ cents to brokers in Ohio and sold all of the offering. The Standard Oil Co. of Ohio was inquiring for gasoline in this market and owners of stations in that state reported local refiners as sold up.

One of the reasons for the low prices necessary to sell in Ohio was the delivered prices quoted from Franklin, Pa., and from New Orleans, La. Offerings from both these points are now substantially on the basis of the Group 3 market. One of the plants near New Orleans quoted 8 cents f.o.b refinery for Cincinnati delivery which figures 7.11 cents from the Group. Shreveport was openly quoting 7¼ cents. Those selling to these differential points at Chicago sales offices say that they do not quite understand this sudden reversal of conditions but are glad to get the business.

Good Business in East

Representatives of some of the largest distributors in the East, including the major companies, have been here and have stated that their gasoline business was good and that they expected to be forced to make some purchases to help out their own refinery output, when the season of heaviest demand came on. It may be that they are now accumulating supplies rather than selling as freely as during the past months. At any rate these differential points have apparently ceased to be a dumping ground for the present at least, and those buyers of gasoline are now paying better prices than they were. There is also a possibility that the quality of the crude so largely run at present by the Seaboard and Gulf Coast refineries enters into the situation.

Whatever may be the cause, the result will be, if it continues, to make a better market for the Mid-Continent gasoline and strengthen the situation for the high-grade gasoline crudes which are chiefly produced and held in the Mid-Continent Field. The tank car price of U. S. Motor gasoline was quite generally advanced one-fourth cent last week at the Atlantic ports which to a degree sustains the suggestion presented above why the market in Ohio and other differential points shows so much change for the better.

There was only a fair demand for the U. S. Motor gasoline in this market last week. Refinery prices held the week through at 6¾ to 6⅞ cents for that grade. During the early part of last week there were some offerings of cars in transit which had to be ordered shipped on purchases made for delivery during the first half of the month. The quantity of these was not large, almost certainly not to exceed a total of 50 cars and this quantity was never offered on any one day. Yet because of the way that these cars were offered for sale, the impression was given that there was a large number of these cars Towards the close of the week, this distress gasoline was all sold and dealers ceased to talk about Motor gasoline "being freely offered at 6⅝ cents" and even less at times. The result was that the market closed decidedly more firm in tone and several refiners who had been selling at 6¾ cents advanced their price to 6⅞ cents, although some of them would still meet the price of those refiners who were selling at 6¾ cents.

Sinclair Advances Price

The Sinclair Refining Co. advanced its price to 7½ cents, thus keeping well ahead of the market as that company has been doing for several months. The company advanced its price generally one-quarter of a cent wherever it operates, including along the Atlantic Coast. Much of this late strength last week was based on the thought that the territory had had a full week of just about as bad weather as was possible and that a change must come shortly which would help the demand.

As a rule, it is believed that dealers are not largely supplied with gasoline right now. They are taking the contract requirements and with such a slow distribution especially all through the Northwest they very likely have some accumulations. One distributor with stations through Minnesota and extending into adjoining states, reports that his gallonage during the first 20 days of this month was barely up to the first 10 days of April, 1927. Naturally he wants his deliveries held back a little until he can sell enough of his stock to be able to take in the cars he expected to need when he ordered for this month basing his shipping instructions on last April's gallonage.

There is one curious feature in the local market. It is the low price at which the higher gravities are quoted as compared with the U. S. Motor grade. This condition has been referred to several times in this market report. The spread instead of increasing is growing more narrow. Large refiners who will hold firm for 6¾ cents for the U. S. Motor grade will sell the 60-62 400 at 7 cents and 64-66 375 at 7¼ cents. The total spread with several is not over one-half cent between the price of U. S. Motor and the 375 endpoint grades. Some of the managers do not profess to have any explanation for the condition except that they have to sell at these prices if they want any business.

Various Explanations Offered

Various other explanations are made, but even admitting that the cost of refining these grades has been decreased through the cracking process and the use of natural gasoline and that, as some say, there are many refineries whose products do not meet the rigid requirements of exporters and must be sold to local distributors, it really seems as though there was a decrease in the demand for these higher gravities. Yet this is rather hard to believe when the number of dealers is taken into account who are now selling the gravities higher than the Motor gasoline. There are a great many who have added lines of the higher gravities and find that they sell rapidly at substantial premiums often to the dealers' surprise. It is possible that the sale of these higher gravities by many dealers is more than offset by the sale of the antiknock gasolines.

One refinery with its own distribution reports that it has ceased to refine the higher gravities and now sells through its own stations only its own brand of U. S. Motor gravity and its own antiknock gasoline. Within four months after the introduction of ts own brand of antiknock the management reported that its sales were practically equally divided between the two grades sold. Its price for the antiknock is 3 cents a gallon above that of the regular grade.

Right now many motorists are changing back to the U. S. Motor from the winter gravity and dealers are also changing their specifications to correspond but with the buying of the quantities of 64-66 375 for export, which have been reported the fact of the small spread between the higher and the Motor grade is worthy of consideration for the reason that it is evidently very possible to secure a substantial premium from many motorists for the higher gravities and greatly increase the profits in the station business. Natural gasoline has been strong although the local activity has not been great, the buying being from refiners.

Kerosene Demand Less Active

Kerosene has been less active in demand but very strongly held with 5 cents the low price for the 41-43 gravity. Some of the dealers are filled up while others are waiting for the active use of the tractors to be resumed. The fields have been in no condition for working and a great many tractors have been idle all or part of the time. The season is growing late for spring plowing and planting and once the fields are in shape there will be a lot of rush work done. Last season in parts of the country near this city tractors were used at night by the aid of the auto lamps to show the way for the tractor to follow the furrow.

Several refiners have been buying the 41-43 gravity and a further export demand is awaited. One large refinery manager stated that the bulk of the shipments from his plant was to other refiners. At least three local refinery offices are ready to buy at the market if assured of prompt shipment. Many refiners are still sold ahead and others are only selling to their regular trade. The demand for the 42-44 gravity has been large enough to absorb supplies of most of the refiners who make the cut and several have withdrawn quotations for the present. The range of prices for the 41-43 gravity was 5 to 5¼ cents and the 42-44 regularly 4½ cents all of last week.

Distillates are just about done for this season. Occasionally a single car is ordered but the bulk of the business very small. Zero gas oils are also quiet for the same reason. There is only a light demand but prices are unchanged. Refiners are holding for 2⅞ to 3 cents for the zero straw oils. There is only a small demand for this product. Dark zero oils are in some request being used by many small and some of the larger manufacturing industries. Offerings are rather free and the market just about steady. There has been less inquiry from the gas companies for the straight run product but it is being quite generally held for cracking stock. No refinery has any of the regular 32-36 straight run gas oil to offer at less than 2½ cents and this price is being quoted direct to gas companies and for resale.

Fuel Oil Holds Up Well

The fuel oil market is devoid of any special features. The demand is holding up very well. Fair quantities of the lighter grades are being called for to be used for heating purposes in the larger class of buildings and for light manufacturing, the demand coming through local distributors for the most part. There is

(Continued on Page 151)

Gasoline Prices in East Resume Rise

U. S. Motor Grade Advances Quarter Cent, With Similar Increase in Naphtha for Export. Export Kerosene Also Marked Up

By Special Correspondent

NEW YORK, Apr. 23.—The forward movement in gasoline prices, which was interrupted a fortnight ago by a spell of unseasonably cold weather, resumed this week, with advances of a quarter cent per gallon in U. S. Motor gasoline in East Coast jobbing markets, and a similar increase in cased naphtha for export. Cased kerosene for export was also marked up a quarter cent per gallon.

This week's advance in U. S. Motor gasoline brings the market to 9½ cents a gallon, much closer to the predicted 10-cent market, and it now appears likely that the forecasts of a 10-cent market on motor fuel by the close of May, frequently heard in the trade during recent weeks, are to be realized. Heavy domestic consumption and a spirited demand for export gasoline, coupled with continued limited offerings, have combined to strengthen the market position this week, and no letdown appears in sight. "Distress" gasoline is conspicuous by its absence and refiners regard the market outlet for the next two months so bullishly that attempts to book May and June contracts at present going prices are not receiving any consideration from sellers.

Inquiries for three gasoline cargoes for France have enlivened the export market during the week.

Gasoline Advances

With a return of better weather conditions, the anticipated advance in gasoline prices has materialized. Acewood Petroleum Co. started the movement on April 18 with a quarter cent advance, bringing U. S. Motor in tank car lots up to 9½ cents a gallon at New York. Pan American Petroleum & Transport Co. followed with a similar advance, quoting motor gasoline at 9½ cents a gallon at New York, Baltimore and Norfolk. A number of independents followed in the advance at New York and on the following day Sinclair Refining Co. announced that it had advanced motor gasoline one-quarter cent at all Atlantic and Gulf Coast terminals. The Sinclair schedule is 9½ cents a gallon at New York, Philadelphia and Portsmouth, 9¾ cents a gallon at Tiverton, R. I.; 9¼ cents at Charleston, and 9 cents at Tampa and Jacksonville, with the New Orleans market quoted at 8½ cents a gallon. Standard Oil Co. of New Jersey advanced the market one-quarter cent to 9½ cents at New York, Baltimore and Norfolk, and Tidewater Oil Co. made a similar advance to 9½ cents at Bayonne and New London. All other marketers have fallen in line with the new schedule.

This week's advance has revived confidence in the market position and refiners and marketers are freely predicting a 10-cent market. One large distributor, in turning down a contract for May delivery at 9½ cents a gallon, remarked to the would-be buyer, "If you can get covered anywhere else at 9½ cents, I would advise you to do so. It certainly looks like a dime market to me."

Operators who each spring are wont to speak jokingly of "the annual gasoline shortage" are finding the market no joke this spring. Much to the surprise of apparently everybody in the trade, there has been a dearth of gasoline at current going prices for the past fortnight and the price advances have not brought out the usual larger refinery offerings. This situation has been particularly true at the Gulf. Marketers who sold Navy for export from the Gulf a month or so ago at 6¾ cents a gallon are finding difficulty in filling orders this week at 8⅜ cents and the market appears to have moved up to 8½ cents a gallon.

Advances in refinery gasoline prices since the first of the month have not been paralleled by any increases in tank wagon quotations. Thus far, the large marketing organizations have been content to get their territories in shape for the spring business, although it is expected that higher tank wagon prices will be announced in the near future in most of the important marketing territories.

The one definite indication of firmness in tank wagon markets has been the realignment of prices in principal distributing centers in each territory, refiners advancing prices at points where quotations have been under the list for the territory as a result of local competitive conditions With the schedules of the leading marketers more uniform than they have been for close to a year, the situation would seem to call for an increase in quotations, in line with higher costs at the refineries. Just where the increase will be initiated is a subject coming in for quite a good deal of speculation in the trade. It seems to be generally felt that the advance will "break" first in Indiana territory, with second guess placing it in South Atlantic markets..

The trade is watching the invasion of Continental Oil Co. territory by Standard of Indiana for developments, although it is generally believed that the process will be a form of "peaceful penetration" as Standard of Indiana extends its activities into Rocky Mountain markets through its subsidiary, Midwest Refining Co.

Premium on California Gas

California gasoline has been established at a premium of one-quarter cent a gallon over other U. S. Motor gasoline in East Coast markets, the Acewood Petroleum Co. having posted this grade at 9¾ cents a gallon, an increase of one-half cent during the week.

Jobbers show a marked preference for California motor gasoline during the warmer months of the year, owing to the special antiknock qualities attributed to this fuel. Large quantities of California gasoline are being used in the manufacture of ethyl gas and other special blends, while a few of the refiners are marketing California gasoline along with their other U. S. Motor fuel at no price differential.

Offerings of California gasoline for shipment to the East Coast are by no means large, and there is something of a shortage on this fuel at present. Distributors in the East have been making efforts to contract ahead, but have met with little encouragement from Pacific Coast refiners thus far. As a result of this condition, East Coast distributors are not booking beyond April 30 at the present price of 9¾ cents. New York, although there has been a good inquiry for May delivery at the same price. According to one large distributor of California gasoline, the situation at present is such that he would not consider booking deliveries over the month of May even at a price of 10 cents a gallon, owing to the impossibility of covering ahead at present quotations. Reports from California this week noting a continued strong tone in Pacific Coast markets, together with a dearth of low-priced motor fuel for shipment to the East Coast or export markets, indicate that the improvement in California gas is easily keeping pace with that of other domestic markets, and that East Coast distributors will have to raise their bids if they hope for a heavy movement eastward this summer. Continued curtailment in crude oil production in California has exerted a further strengthening influence upon the gasoline situation on the Pacific Coast.

West Texas Curtailment

The progress of the prorating campaign in West Texas is being watched with close interest by the trade in the East. Although West Texas crude is not as desirable from the refiners' standpoint as "sweet" crude, the decline in light oil production in the Seminole area is being offset by the heavier output of West Texas crude, the low price of 60 cents a barrel on the latter being no mean recommendation in itself.

Standard Oil Co. of New Jersey is reputed to be the largest individual user of West Texas crude, taking 50,000 bbls. daily at its refineries in Baltimore and New Jersey, considerable of this oil supplanting Mid-Continent crude formerly obtained from other fields. The oil is supplied through Humble Oil & Refining Co., a subsidiary, and is shipped north through Corpus Christi, the 50,000 bbls. daily being the Humble's pipe line capacity from West Texas to the port. It is expected that this capacity will shortly be increased to 75,000 bbls. daily.

Venezuelan crude, also used largely at East Coast refineries, is under much better control as to supply. At the close of February there were only 33 wells drilling in Venezuela, the operators in that country having curtailed their operations to a point just sufficiently large to keep their operating forces intact. The Ambrosia, Benitez, Concepcion and La Paz Fields are reported entirely shut in, with all drilling suspended. Production at Mene Grande has been sharply curtailed, with only about two dozen strings of tools running in the Lagunillas and La Rosa Fields at the start of April, these strings being evenly divided among Lago, Royal Dutch and Gulf.

Wildcatting in Venezuela has been entirely discontinued in any sections where it is felt that successful results might bring on a rush of competitive drilling..

As contrasted with this close curtailment, it is reported that there are close to 200 strings of tools running in the West Texas fields, where production is now more than 50,000 bbls. daily ahead of that of Venezuela.

In as much as only a comparatively small amount of current West Texas production is being shipped out, eastern refiners look for a continued ample upply of low-priced crude from this section. Aside from Standard's movement of 50,000 bbls. daily to the Atlantic Seaboard, Standard Oil of Indiana is moving oil by tank car to its refineries at St. Louis, Kansas City and Chicago, with Union Oil Co moving West Texas oil to its Chicago and St. Louis refineries. Atlantic Refining Co. is moving large quantities of West Texas crude to its Philadelphia refinery.

Pew Takes on Venezuela Oil

E. J. Pew, president of the Beacon Sun Co., returned this week from a visit of two months in Venezuelan oil fields. According to Mr. Pew, 1928 production in Venezuela will approximate 110,000,000 bbls., as compared with 64,000,000 bbls. last year. Commenting on the situation, he said:

"Present production of Venezuela is almost wholly confined to the east side of the Maracaibo Basin. There are other areas, such as La Paz, La Concepcion, La Deora and La Tara, which are developed fields, but closed in, on the west and southwest sides of Lake Maracaibo. Principal producing fields are Lagunillas, La Rosa and Ambrosia on the east side of the lake. Mene Grande, oldest field of importance, is largely shut in. There can be no doubt as to the great importance of Maracaibo Basin development. Production from this area probably will exceed in importance Los Angeles Basin. The yield of Venezuela, when finally developed, will run into billions of barrels. Potential production already developed is probably twice the actual present output. The Atlantic Refining Co in the Mara district, northwest of the city of Maracaibo, and the Gulf Oil Co., in the same district, have an interesting development that may open up considerable new territory. There is also much interest in the Standard Oil Co. of California and Beacon Sun Co. well in the State of Falcon, northern Venezuela, which has encountered light oil. Drilling in the proven districts of the older fields has been very much curtailed in the past three months and the tendency among the three companies controlling these fields seems to be to develop more slowly."

Kerosene Consumption Stimulated

Kerosene consumption has been stimulated during the past week by the cold spell, and refiners are getting a heavy volume of tank wagon business, while jobbing sales are also larger. The tank wagon quotation remains at 15 cents a gallon. In the Bayonne market, water white in tank car lots is quoted at 7½ cents a gallon, with prime 1 cent a gallon lower.

Reports from practically all other important refining centers this week note advances of from an eighth to a quarter cent per gallon on kerosene, but thus far the East Coast market has not been affected by the rising market, and present sentiment does not favor any change in the price, unless the advance at nearby refinery points should continue. Heavy buying on the part of the interior trade has been a factor in strengthening Group 3 markets, while export buying has kept kerosene at the Gulf in strong position.

Fuel Oil Changes Unlikely

Refiners anticipate no early change in the bunker oil situation. Contract deliveries are the chief feature of the market, which remains at $1.35 a barrel, refinery, at East Coast ports, with the usual lighterage charge of 6½ cents a barrel in New York Harbor. The Boston market has developed some irregularity, with prices of $1.35, $1.38 and $1.40 quoted by different refiners. Diesel oil is steady at $2 per barrel.

Although fuels are reported weaker in the Southwest and at the Gulf, there are no indications of unsettlement in the market at principal East Coast terminals. Production and consumption are well balanced, and barring an unlooked-for influx of fuel oil from Mexico or California, the market appears well in hand. Any sustained advance in gasoline prices, it is argued by some in the trade, would result in a resumption of demand for fuel oil for cracking during the summer months. Stocks of gas and fuel oils at refineries east of the Rocky Mountains are reported to have declined 143,000 bbls. during the past month.

Gas Oil Sluggish

Gas oil contract takings have been a little heavier over the week, and the market for 28 plus oil is still held at 5¼ cents a gallon at terminals, although the market position is not as strong as formerly, and this price could possibly be shaded on a firm bid. Refiners are still holding their higher gravity gas oils off the market as the gasoline market develops further strength, and market gossip has it that a good demand for this class of oil for cracking is expected to develop a little later on in the season.

Furnace Oil Season Near End

Cold weather has speeded up deliveries, but this oil is about through for the sea-

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Fractionation in Gasoline Treatment

Best Results Obtained When Product Is Separated Into Fractions and Each Given Necessary Chemical Treatment

By H. P. Rue*
Associate Refinery Engineer, United States Bureau of Mines

Manufacturing and refining gasoline so that it will meet all the requirements of the motoring public is often a difficult and expensive process, especially when the gasoline is made wholly or in part from cracked or pressure still distillates. Nearly all of the gasoline made in the United States receives some kind of chemical treatment before it is sold to the public, the conventional method with cracked or synthetic gasolines being to treat the raw distillates with sulphuric acid and then with an alkali, and, if necessary, to redistill with steam to the required distillation range. Many refiners have developed improvements in this process, and variations are necessary for treating some classes of distillate, but in general the acid-alkali treatment can still be considered standard practice.

During the last few years the refining industry has made great strides in the development of continuous equipment for the fractionation of the lighter products from petroleum. Bubble towers are used in many plants and more are being installed daily. The advantages of an effective continuous fractionation system in stabilizing the distillation range of the gasoline produced are generally realized, but I believe that little attention has been paid to the possibility of using this distillation equipment to reduce the amount of treating necessary and thus lower treating costs. My work with the Bureau of Mines during the past two years has been to investigate this possibility, and although the investigation is not complete I believe that the results already obtained are well worth your consideration.

Removal of Impurities

There are several reasons for subjecting a gasoline to treatment before it is sold as motor fuel, the chief ones being to improve the color, to remove corrosive or evil-smelling sulphur compounds, and to remove the gum-forming constituents. The fundamental principle of the present investigation is that these various impurities are not distributed evenly through the boiling range of all gasolines, and in some cases at least they seem to predominate in certain fractions. By careful fractionation, for example, in a bubble tower, it is possible with some gasolines to concentrate each impurity in a small portion of the product so that these small portions are all that require chemical treatment, the greater part of the gasoline being ready to market as it leaves the condenser.

The possibilities of efficient fractionation on the treating of gasolines were first brought to our attention during another investigation in the bureau. A sample of cracked distillate was distilled, and a series of fractions with successively higher boiling ranges was made. The first few of these fractions were water white, while the higher boiling ones were yellow. This set of fractions was distilled again, and more of the gasoline was recovered free from color, indicative that if a better method of fractionation were available it might be possible to obtain almost all of the gasoline in a water-white condition.

Experimental Equipment

A bubble tower can be used to advantage to fractionate gasoline into several portions, as streams can be drawn from different plates in addition to the product from the top of the tower. By careful study of the streams a control system can be applied to the tower so that the greater part of the product can be obtained in marketable condition no further distillation or chemical treatment being necessary. Some of the streams may require one type treatment, others another type, depending on the kind of impurities each contains. In the present investigation a semicommercial 13-plate bubble tower was used. Pressure-still distillates and straightrun naphthas of different types were charged into a pipe still at the rate of about 20 gallons per hour.

The mixture of vapor and liquid coming from the pipe still was flashed in an evaporator and the vapor from the evaporator was passed into the bottom of the tower. Streams could be drawn from any desired plate in the liquid state and passed through cooling coils. Vapor from the top of the tower was passed through an appropriate condenser. Each of the distillates was in this way cut into several fractions and a thorough laboratory examination was made of each fraction.

Effects on Color

As was to be expected, it is comparatively easy to obtain most of the gasoline in a water-white condition. This does not mean that because a gasoline is water white when first made it will remain so in storage or after being exposed to light. When operating on straightrun distillate from high-grade crude it was possible to take most of the product overhead as vapor, leaving practically all the colored compounds to be withdrawn from the side of the tower in the liquid state.

This fraction containing the coloring material could then be treated with acid and alkali and added to the overhead distillate to give a finished gasoline. When operating on pressure-still distillates it was found that the first 30 or 40 per cent of the gasoline would have good color and would be stable but the rest of the product would require treatment for color. It is believed, however, that with a more efficient tower a much larger proportion of the product could be obtained with a very stable water-white color.

Effect on Sulphur Compounds

In our experiments on fractionation of pressure distillate by means of a bubble tower we found apparent segregation of the sulphur compounds, at least as far as the usual corrosion and doctor tests are concerned. With one pressure distillate which yielded about 70 per cent of 437 degrees Fahrenheit endpoint gasoline, we found that the product coming off in the vapor phase was corrosive to the copper-strip test and doctor sour, and the product coming off in the liquid phase was noncorrosive and doctor sweet. If the total yield of gasoline was taken off in the vapor phase it was corrosive and doctor sour, but if we controlled the temperature in the tower so that we took off part of it in the liquid phase and part in the vapor phase and later combined these to get the total gasoline yield, we were able to get a noncorrosive, doctor-sweet gasoline without chemical treatment. I might add also that the product formed by combining these two streams had good color stability and after being exposed to direct sunlight for six months showed no drop in color.

With another pressure distillate we had somewhat the same experience. Both the vapor-phase and liquid-phase products were noncorrosive, but the vapor-phase product was always doctor sour. This distillate gave about the same yield of 437 degrees Fahrenheit endpoint gasoline as the one mentioned above. By controlling the temperatures in the tower and the amount drawn off in the three different streams we were able to reduce or segregate the doctor-sour portion to 8 per cent of the yield.

The effect of fractionation is also very pronounced in the treatment of straightrun products from certain crudes. I have in mind one crude that yields gasoline which in general is very difficult to make doctor sweet. The portion of this gasoline that offers the greatest difficulty is in the heavy ends, I believe around the last 10 or 20 per cent of the 437 degrees Fahrenheit endpoint product. We have experimented with treating or sweetening the export and Navy grades of gasoline from this crude and found that the export grade can be treated much more easily than the Navy grade. If good fractionation is employed in distilling this gasoline from the crude its effect is very noticeable in the treating.

Effect on Gums

The work on frationation gave some interesting points on the gum content of various fractions from cracked gasoline. The gum test as run in the laboratory (either copper-dish or steam-oven method) will usually show that the heavier the stream the greater the gum content, but this is not always true when the samples are allowed to stand in storage. We have found that certain fractions seem to contain a preponderance of the gum forming compounds. In one sample of pressure distillate that I have in mind, we found that the 30 or 40 per cent fraction formed on standing in storage many times the amount of gum in all the other fractions combined. The 10 and 20 per cent fractions did not contain any gum, even after standing exposed to direct sunlight for a year. It is not always the same fractions in different cracked gasolines that contain the greatest amount of gum-forming compounds, thus it is necessary for each refiner to study his own particular stock.

Refinery chemists generally assume that diolefins are the parent substances from which the gums are formed. Heat and pressure will cause these diolefins to polymerize to higher boiling compounds which are usually considered gums. This being the case, it is not unreasonable to assume that gums may be formed during a distillation process, and if the fractionating device is effective enough these gums should be fractionated out of some of the cuts.

In connection with one of our runs in which three streams of light products were drawn from the tower we found some interesting relations in the gum contents of the different streams, as determined by the steam-oven method. When these three streams were drawn from the tower, it was found that the gum content of the middle stream was ordinarily greater than that of the other two streams combined, and by controlling the temperatures and the amount of each stream it was possible to vary the gum content at will. This must not be construed to mean that it was possible to eliminate the gums entirely, although in future it may be possible to do so. It does indicate, however, that polymerization does take place in a bubble tower and that it is possible to control this polymerization and to a certain extent segregate the polymerized products.

Losses With Sulphuric Acid

Treatment with sulphuric acid will remove some of the sulphur compounds and change the form of some of the others, but its effect on free sulphur may be

*Semiannual meeting, the National Petroleum Association.

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VOLATILITY TEST FOR MOTOR OIL BOTH CRITICIZED AND COMMENDED

By Earl E. Bown*
Emery Manufacturing Co.

The subject of volatility, applied to motor oils, is one that only recently has been brought to the attention of the majority of refiners. About a year ago the Cadillac Motor Car Co. introduced a volatility test for motor oils, to be applied to oils intended for use in cars of their manufacture. Since the introduction of this test to the oil industry a great deal of comment, both favorable and adverse, has been aroused. Because of the complexity of the testing apparatus and method of procedure it is doubtful if the test will be made by any but the largest laboratories, at least until it proves itself of such importance that it cannot be ignored. As a result not a great deal of experimental work has been done. Certainly not a great amount of information has been published.

The thought prompting this paper is that a summary of that which has already been published might be of value in forming some chaotic thoughts into a definite opinion and in stimulating a desire to learn about it. So bear in mind that this paper represents such information as could be gathered from various sources with the less important matter dropped and the high points summarized in the following.

First, we ask, what is volatility of motor oil? It may be defined, for our purpose, as the rate of evaporation of the motor oil in use in the automobile crankcase. The desire back of the test is to learn why some oils are consumed in the car much more rapidly than others, or to express it in another way, why a motor doing the same work uses more of one oil than another.

The evaporation test for volatility used in the laboratories of the Cadillac Motor Car Co. is made by maintaining a small quantity of the oil under test at 230 degrees Fahrenheit for 24 hours. Weighings are made before and after the heating, and the evaporation loss in weight is computed and expressed as per cent evaporation. Five cubic centimeters of the oil are placed in a dish that has its place in an electric oven. The shelf is tilted at an angle 15 degrees from the horizontal and as the shelf is revolved the oil is agitated in a manner similar to the movement in a crankcase. Fifteen revolutions a minute are made by the shelf. Two three-fourths-inch openings are located near the top of the oven while a blower near the bottom maintains circulation which carries the vapors off as in the case of a ventilated crankcase. During the 24-hour test the oven temperature is maintained at 230 degrees Fahrenheit. To quote a Cadillac bulletin, "This test simulates the actual conditions under which the oil functions in the engine crankcase and together with test by distillation will be used in ascertaining the stability of engine oils."

Distillation Test

The distillation test referred to may be briefly described as follows: A 250

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considered negative. The acid will polymerize the diolefins to higher boiling hydrocarbons but at the same time it will also polymerize some of the olefins and thus cause excessive losses unless the conditions of temperature and time of contact are carefully controlled during the period of treating.

In treating pressure distillate with sulphuric acid before rerunning the greatest loss seems to be in the light ends. If the distillation curves for raw and treated pressure distillate are plotted on the same sheet it is usually noticeable that these curves will diverge greatly up to about the 30 per cent point and from there on to the end they will run parallel. The percentage difference of the two curves at this point (of greatest divergence) is an indication of the loss in the light ends. This, however, does not indicate the total loss as no doubt some of these light fractions are polymerized to higher boiling compounds which still fall within the gasoline distillation range.

In one gasoline studied the loss in the light ends was about 17 per cent while the total loss was 13 per cent which indicated that part of the light ends were polymerized to higher boiling compounds which still fell within the gasoline distillation range. This loss was the greatest that we found in our experiments with pressure distillate. I believe the average would be around 5 or 6 per cent. If the temperature of the product during the time of treatment with acid is kept as low as possible and the time of contact is curtailed the losses may be reduced considerably.

Caustic or Soda Ash

Caustic soda is used a neutralizing agent after acid treatment and also as a desulphurizing agent in combination with other compounds, such as litharge. A solution of caustic soda and litharge known as "plumbite" or "doctor" solution, is used extensively in petroleum refining.

Aside from the conventional methods of applying alkali, very good results can often be obtained by washing the product as soon as it leaves the condenser with caustic or soda ash. Washing with caustic is much more effective if done at once than if the product is allowed to stand for a time before washing. It is especially so in the case of pressure distillate that has been acid treated before rerunning. In rerunning pressure distillate that has been acid treated some of the esters will break up and liberate SO_2, which will attack some of the unsaturated compounds unless it is removed or neutralized at once.

At times good results may be obtained by washing with water alone. In some of our experiments we have found that it was as effective as steam distillation in improving the color of the products.

Conclusions

Our work on the effect of fractionation on treating suggests that it is best to separate gasoline distillate into fractions, treating each according to its requirements. As I stated in the beginning this work is not complete. In fact, I do not believe that it will ever be possible to give detailed directions for the best operation of fractionating equipment. Different crude oils apparently contain different amounts of impurities, and these impurities in turn vary greatly in boiling point.

It is necessary therefore for each refiner to study the products made from the crude he is running and find out for himself just what parts of the gasoline require the different kinds of treatment. If this is done, I believe it is possible for any refiner to reduce very materially the volume of product which must be treated and this in turn will correspondingly reduce the cost of manufacturing gasoline.

GASOLINE PRICES IN THE EAST RESUME RISE

(Continued from Page 141)

son. The tank wagon market holds at 10 cents a gallon with furnace oil at refineries 5¾ cents a gallon for 38-42 gravity. It is reported that some shading of the tank wagon price has been done in competitive trading.

There is, of course, a certain amount of year-'round business on furnace oil in metropolitan New York territory, but seasonal slackness is expected to make for a marked falling off in volume by the end of the month.

Refiners are lining up their sales campaigns for next season, and it is believed that furnace oil business will show a substantial increase. Reports concerning the progress made by the manufacturers of oil burners in their drive to line up summer installation business are to the effect that the response has been heavy, and that the leading companies will be busy with new installations throughout the summer. The increased demand for oil-burning equipment is particularly notable in some of the suburban communities.

Lub Sales Slow

Aside from the movement on regular contracts, the lubricating oil market has been in dull position this week. Refiners declare that the withdrawal of lubs on contracts has shown a heavy gain, but this development is a normal one for this season of the year. Compounders have been getting a good demand for motor oils, and the run on this grade continues unchecked. Industrial consumption is characterized as "fair," and little better. As to the matter of prices, the lubricating oil market is not in as satisfactory a position. Competition for business continues keen, and it is an open secret that this competition is generally taking the form of price cutting. Recent slackness in export buying of lubs has had its effect on the spot market, and stocks are backing up in jobbers' hands in some instances, resulting in shading of prices to move out accumulated holdings. In addition to this condition, the situation at nearby refinery points has not been as firm as might be desired, and there seems to be plenty of cheap oil around. These conditions have naturally made for a weak market, and prices are rather erratic in consequence. One practice which tends to unsettle conditions is that of barrelling lubs in second-hand cooperage which cuts the laid-down cost here anywhere from a half cent to a cent a gallon. Paraffin oils have remained comparatively steady this week, with cylinder stocks coming in for some shading.

Petrolatum Prices Sag

Domestic buyers are out of the petrolatum market to a considerable extent this week, and with the export buying movement only of routine amount, prices have weakened somewhat. Dark green is still held at 2 cents a pound, but amber can be bought promptly at 3¼ cents, a drop of one-eighth cent a pound, and cream is available at 6⅜ cents, likewise an eighth under last week's market. Lily white for prompt shipment is offered at 8 cents a pound, a drop of one-quarter cent, while sellers have revised their views downward on snow white, which can be bought at 8½ cents a pound, as contrasted with the recent asking price of 9¼ cents. Some reports have it that the current weakness is but a temporary condition, resulting from a let-down in domestic buying and consequent accumulation of spot stocks, and this view would appear to be borne out by the disinclination of sellers to book later deliveries at present quotations.

Paraffin Wax Buying Livelier

There has been considerable speculative buying in the wax trade here this week, and this has put the market up an eighth to a quarter cent per pound. The market is not yet fully established at the higher levels, although it appears that the eighth-cent advance has been made good. Refined 120-122 a.m.p. is quoted at 3⅞ cents, with 125-127 a.m.p. at 4⅛ cents and 130-132 a.m.p. at 4½ cents a pound. Spot stocks of 135-137 a.m.p. are pratically unobtainable, with the market nominal at 6⅛ cents a pound.

Export wax sales have slowed down this week, and in addition there has been very little buying by the domestic trade. Candle manufacturers are well supplied at present, and deliveries on old orders are taking care of the requirements of manfacturers of waxed papers. Other consumers likewise seem to be carrying sufficient stocks for their prompt requirements, judging by the dearth of inquiries in the market.

Stronger Export Market Continues

A stronger market for export gasoline has continued, both at East Coast centers and at the Gulf. Cased naphtha for export was advanced one-quarter cent a gallon to 25.40 cents, effective April 20. Navy in bulk is quoted at 10 cents a gallon, North Atlantic, with 64-66 degrees, 375 endpoint naphtha strong at 11 cents a gallon. The market at the Gulf is higher at 8½ cents for Navy, 9¼ cents for 60-62 degrees 390 endpoint fuel, and 9½ cents for 64-66 degrees 375 endpoint naphtha. Three inquiries for cargo lots for the Continent were in the market during the week.

Export kerosene in cases is also a quarter cent higher, Standard Oil Co. of New Jersey having advanced the market April 20 to 17.40 cents for standard white and 18.40 cents for water white. Bulk kerosene for export at East Coast terminals is strong at 7½ cents for prime white and 8½ cents for water white.

There were no bulk gasoline cargoes reported exported from New York during the week ending April 13, although a cargo of 32,905 bbls. was shipped from Philadelphia on the Tamarac for Foynes, one of 2,800,000 gallons for Dunkirk and Rouen on the Ophelie and another of 32,798 bbls on the Barendrecht for St. Louis du Rhone and/or Cette. Three cargoes of kerosene cleared from New York during the week ending April 13, the Alegrete with 240,000 gallons for Bahia, the Svithiod with 300,000 gallons bulk for Stockholm, and the Christian with 999,890 gallons bulk for Nyborg. In addition, the Christian carried 2,209,200 gallons of bulk naphtha and the Svithiod 2,016,000 gallons bulk. The Gloxinia cleared with 520,000 gallons of engine oil for Rio de Janeiro. The William Penn cleared for Chianking or Chingwangtao with 1,000,000 gallons of refined petroleum, the Christian for Nyborg also taking 1,163,400 gallons of refined oil, while the cargo of the Svithiod for Stockholm included 655,200 gallons of refined petroleum. The largest wax cargo was that of the Essequibo, which carried 68,400 pounds for Antofagasta, 141,200 pounds for Valparaiso, another lot of 802,950 pounds for Valparaiso, and 425,400 pounds for Talcahuano. The William Penn carried 847,791 pounds of paraffin wax for Shanghai.

Exports of principal refined petroleum products from New York for the week ending April 3, with comparison for the previous two weeks, follow:

	Week Ending		
	April 13	April 6	March 31
	Gallons	Gallons	Gallons
Gasoline	277,800	592,500	2,938,626
Kerosene	1,846,400	527,000	245,350
Naphtha	4,886,000	295,000	456,550
Fuel oil	3,298,220		4,750
Lubricating oil	2,316,700	5,500,194	1,583,408
Petroleum (refd)	3,643,340	1,694,000	640,630
	Pounds	Pounds	Pounds
Petrolatum	40,500	165,792	51,619
Paraffin wax	1,045,300	5,548,415	2,584,680
Refined	691,900	110,000	
Scale	1,649,500	1,520,228	118,200

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended April 14 totaled 272,000 bbls., a daily average of 38,857 bbls., against 523,000 bbls., a daily average of 74,714 bbls. for the week ended April 7 and a daily average of 42,821 bbls. for the four weeks ended April 14.

	Week Ended April 14
At Atlantic Coast Ports—	
Baltimore	78,000
Boston	60,000
New York	75,000
Others	59,000
Total	272,000
Daily average	38,857
Daily average four weeks ended	42,821
Distribution of total California oil receipts is as follows:	
Crude	59,000
Gasoline	153,000
Gas oil	60,000
Total	272,000

Imports of Petroleum

Imports of crude and refined oils at the principal United States ports for the week ended April 14 totaled 1,520,000 bbls., a daily average of 217,143 bbls., compared with 1,640,000 bbls., a daily average of 234,286 bbls. for the week ended April 7, and a daily average of 234,500 bbls. for the four weeks ended April 14.

	Week Ended April 14
At Atlantic Coast Ports—	
Baltimore	260,000
Boston	97,000
New York	741,000
Philadelphia	244,000
Total	1,342,000
Daily average	191,714
At Gulf Coas. Ports—	
Galveston district	100,000
New Orleans and Baton Rouge	78,000
Total	178,000
Daily average	25,429
At All United States Ports—	
Total	1,520,000
Daily average	217,143
Daily average four weeks ended	234,500

OIL COUNTRY GOODS MAY BE ADVANCED

(Continued from Page 136)

freight cars, but this is the first freight car buying of any moment for two months.

Finished steel prices have been holding only moderately well. In none of the lines in which prices were advanced in the past five months are the full advanced prices holding, but in no case are prices as low as last November. Sheets have lost almost all of their advance, which was largely on paper as large buyers were covered, but they are a shade above their minimum.

CONTINUED IMPROVEMENT IN CALIFORNIA MARKET

LOS ANGELES, Calif., Apr. 21.—Domestic U. S. Motor gasoline continues to be the strongest feature in the California petroleum market. The demand continues very heavy and prices have strengthened still further. In most cases, sales are being made around 10½ to 11 cents, f.o.b. refinery, excluding state tax. A few sales have been made at even higher prices, but these do not reflect the market. The improvement shown in the domestic U. S. Motor gasoline market during the last month has been phenomenal. Prices have improved fully 3 cents in the wholesale market and present indications are that the market will continue firm.

California U. S. Motor gasoline for export is also strong. Information received from fairly reliable sources indicates that there has not been a cargo sold during the last three weeks. Whatever deliveries have been made have been under old contracts still in effect. California companies apparently do not wish to even quote on this business, but if any quotations were being made, they would be around 7½ cents a gallon. Furthermore, this firming in price is not looked upon as a temporary condition, but is expected to continue.

The natural gasoline market continues unchanged. While not nearly as strong as U. S Motor, this market is satisfactory at the present time. Engine distillate has improved along with gasoline. The 43-45 445 endpoint is being quoted at from 8 to 8½ cents, while 480 endpoint is bringing from 7½ to 8 cents. These prices exclude the state tax.

The demand for kerosene, both for domestic use and for export, is good. While there has been no further improvement in prices, the market is firm and conditions on the whole satisfactory.

Lubricating oils are also showing some improvement. The largest outlet for this commodity is for use in automobiles, being sold along with gasoline. As summer approaches and gasoline sales increase, lub oils also show improvement. While there has been very little change in tank car prices of lubs, the price to jobbers has been improving in the last few weeks and marketers of this product feel that prices will continue to strengthen. It is very possible that the lub oil market, which has been depressed for so long, will actually show some life in the near future.

Brief Items for Petroleum Refiners

ANNOUNCE CHANGES IN I.O.M.A. PERSONNEL

CHICAGO, Apr. 21.— In addition to the changes already announced in the organization of the Independent Oil Men of America other changes are to be put into effect that will take that organization out of the sale of petroleum products. The department devoted to the sale of lubricating oils particularly the Red Hat motor oils which for the past six months has been under the management of E. E. Jensen is to be discontinued on May 15.

Mr. Jensen has not announced any plans for the future. The organization, it is explained, has not sold motor oils or greases but has left this to the licensed compounders. These will continue to supply the approved products as in the past. Mr. Jensen's efforts have been directed mainly to inducing the members to take on and push the sale of the Red Hat brands and this will be done hereafter by the licensed compounders.

Ray Overholzer who has been associated with the I.O.M.A. as assistant to the president has resigned effective on May 1. Mr. Overholzer states that he has not decided just what he shall do but intends to stay in the oil business.

DIXIE OIL CO. STARTS OPERATING REFINERY

SHREVEPORT, La., Apr. 23.—Dixie Oil Co. has completed the rebuilding of the old Paramount refinery at Superior, 5 miles north of Oil City and the first oil was charged to stills for commercial run today. It is a topping plant of 5 000 bbls. capacity in charge of O. L. White as foreman. While operated by Dixie Oil Co. is owned by the manufacturing department of the Standard Oil Co. of Indiana.

For the present it will run only the Dixie's own oil from the Pine Island Field, of which the company has 85.000 bbls. in storage and while no contracts for production have been made, outside oil from Pine Island will be run when the present stock is exhausted. By May 1, it is expected to be running 2,500 bbls. daily. Crude is delivered to the plant by a 4-inch line built by the company and gas from the same source is piped to Superior for fuel.

The plant was built originally in 1920-21, and operated for a short time under lease to interests other than the builders. It has been standing idle for most of the time since it was built, however, passing to the present owners two or three years ago. For the last two or three months it has been undergoing repairs and replacements and addition of run down and crude storage.

START CONSTRUCTION OF MEDINA COUNTY PLANT

SAN ANTONIO, Tex., Apr 23.—Practically all of the material for the Golden West Oil Co. refinery was on the ground in Medina County in the Ina Field last week and it is expected that the plant will be completed and in operation within 30 days. The plant, which will have a capacity of 200 bbls. a day, is part of the Liberty refinery at Cisco, Tex.

Other units of the plant at Liberty are being shipped to Nuevo Laredo, in Mexico, across the river from Laredo, and will be erected there to utilize crude from the Mirando Field. The 200-bbl. still and tower, pumps and brick were all on the ground last week for Golden West Oil Co.'s refinery. The plant is being erected on the company's lease in the Ina Field and will utilize gas as fuel from a well the company owns in the Adams Field 1 mile south.

NEW OIL INCORPORATION

CHATHAM, Ontario, Apr. 21.—Supreme Oil Corp., Ltd., has been incorporated under Dominion charter with an authorized capital of $100,000 preferred stock and 10,000 shares of no par common stock. The head office is at Toronto, and a wholesale storage unit will be built at Leaside, Ontario. The company will deal in gasoline and other petroleum products, selling to independent service stations and garages, but may later, through subsidiary companies, build and operate service stations. The officers are: President, Hon. E Lavin Girroir; vice president, L. B. Lloyd; secretary-treasurer, Joseph Montgomery; directors, R. W. Bross and E. M. Carroll.

MIDWEST ADOPTS TRADE NAME FOR ITS PRODUCTS

DENVER, Colo., Apr. 21.—Gasoline and motor oils from the plants of the Midwest Refining Co. are now being marketed for the first time in the Rocky Mountain area under the company's own brand name "Midwest." The slogan adopted is "Mountain Made for Mountain Trade." A big streamer stretched across the entrance to the executive offices of the company in Denver disclosing the brand name and slogan was the first official acknowledgment that the company had entered the retail marketing business though it had been known generally for several months that stations were being acquired through subsidiary companies.

The Midwest is owned by the Standard Oil Co. of Indiana which heretofore has not been a retail distributor in this territory and even now the Standard trade names will not be used. The Midwest products were for many years marketed in the territory principally by the Continental Oil Co., but in the past few years the Continental has been building up its own production and refineries and the present development is considered a logical result. The change signifies a divergence in the policies of the two companies, but not a trade war as some of the newspapers attempted to make it appear. The Midwest outlets are controlled through subsidiaries, the A. A. Vickers Petroleum Co. in Colorado and New Mexico, the Aero Oil Co. in Wyoming, the Hughes Oil Co. in Montana, and the Sample Oil Co. in South Dakota. The companies are operating 150 stations at the present time.

DENY NEW MOTION

The Supreme Court of Texas has refused to reconsider the case in which the Grayburg Oil Co. was compelled to pay the gasoline tax on sales made by that company to the Government. As a result of the court's decision and attitude in the case, the state comptroller and collector of taxes has announced he is preparing to assign additional men from his force of tax supervisors to checking gasoline sales to the Federal Government in Texas.

The court's ruling was in the State's successful suit to collect several thousand dollars gasoline tax from the Grayburg Oil Co. of San Antonio on sales to the Federal military reservation near there.

H. A. SCOTT RESIGNS

CHICAGO, Apr. 23.—H. A. Scott, in charge of light oil sales for the Acme Petroleum Co. of this city, has resigned to take effect on May 1. Mr. Scott has not made his plans for the future. He was for eight years the Pittsburgh representative of the Imperial Refining Co. of Ardmore.

HUDSON-MARLAND PLANT TO DEVELOP TAR SANDS

CHATHAM, Ontario, Apr. 21.—Official announcement has been made by Glen M. Ruby, vice president and general manager of the Hudson's Bay-Marland Oil Co. of the plans of that company for development of the tar sand deposits of northern Alberta. The plans include the erection this spring near the terminus of the Alberta & Great Waterways Railway of a semicommercial plant for the purpose of trying out the extraction of the bitumen and rendering it available for commercial purposes. Upwards of $50.000 has been set aside for this new plant, and work will be started as soon as possible.

"The plant," stated Mr. Ruby, "is being erected to try out processes which have proven successful in the laboratories but have not had a commercial tryout yet." Mr. Ruby also made it plain that the work now contemplated is in the nature of a test, and not development work, though if successful there is no doubt that development on a large scale will follow.

"No attempt to establish markets will be made until a successful process is developed and it is demonstrated that the asphalt can be extracted cheaply enough to compete with asphalt from refinery residue."

Mr. Ruby pointed out that although his company is the first to place a plant and laboratory right in the field, it is not the first company to attempt to utilize the Athabaska tar sands. Several attempts have been made by other companies and individuals, but so far no process has been sufficiently successful to be commercially profitable

It is the intention of the Hudson's Bay-Marland Oil Co. officials to co-operate with experts of both the Provincial and Dominion governments and government experts who work in the tar sands each year will be invited to use the Hudson's Bay-Marland plant and to work with the scientists and practical refinery men who are being brought West for the McMurray plant of the company.

"We are going into this," stated Mr. Ruby, "in line with our original policy of exploration covering the oil possibilities of western Canada, believing that the McMurray deposits are worth consideration and study to the extent, at least, of the cost of a dry hole in any district of similar size."

Mr. Ruby conceded that he did not expect the new process to be immediately successful. Many changes and substitutions are anticipated before the best results are obtained, and the cost of a marketable product is still a matter of doubt.

"But, the tar sands have vast potential value," stated Mr. Ruby, "and while Alberta is likely to produce so much black asphaltic base oil in the future that it can be obtained as a refinery residue much more cheaply than it would be possible to extract it from the tar sands, they will ultimately be utilized."

Mr. Ruby also issued a statement branding as false the current reports linking the Hudson's Bay-Marland Oil Co. with the Dutch Shell.

Mr. Ruby recently returned from Oklahoma where he has been conferring with E. W. Marland, president of the Marland Oil Co., regarding development in the Canadian West.

PURE CO. PLANT STARTS

Over the past week the Pure Oil Co. resumed operations at its 5,000-bbl. Ardmore, Okla., refinery. The plant is running 2,000 bbls. of crude daily. The plant had been idle since the first of the year.

TO RESUME OPERATIONS

The Davis Oil Co., distributors of refined oils in the southern part of California, has leased the 1,000-bbl. refinery of the California Naphtha Products Co. at Signal Hill. The plant has been idle for more than a year but is expected to be in operation under the new management within a short time.

REFINERY STOCKS SHOW INCREASE DURING MARCH

Only a small change in the total oil stocks held at refineries east of California resulted over March, according to the American Petroleum Institute. Foreign crude stocks showed a gain of 1,081,000 bbls., the principal change. The increase and decrease in the stocks of the various commodities is shown below (in barrels of 42 gallons):

	Increase	Decrease
Domestic crude oil	.....	369,000
Foreign crude oil	1,081,000	.....
Gasoline	379,000	.....
Kerosene	35,000	.....
Gas and fuel oils	.....	143,000
Lubricating oil	.....	10,000
Miscellaneous	.....	539,000
Total	1,495,000	961,000
Deduct	961,000	.....
Net increase	534,000	

M'DOWELL TRANSFERRED TO TULSA HEADQUARTERS

Robert McDowell, who has been in charge of the Hawkeye Oil Division of the Mid-Continent Petroleum Corp. at Waterloo, Iowa, has been transferred to the Tulsa headquarters of the company. In his new position, Mr. McDowell will be assistant to D. W. Moffitt, vice president of the corporation.

Mr. McDowell is widely known in marketing circles of the Mid-Continent and Middle West. He was formerly connected with the Producers & Refiners Corp. At the time the Mid-Continent Petroleum Corp. took over the marketing properties of the Blackhawk Oil Co. of Waterloo, Iowa, last year, Mr. McDowell was vice president and general manager of the latter company.

NEW REFINING PLANT

CHATHAM, Ontario, Apr. 21.—It is announced that the Price Oil Development & Refining Syndicate, which has a plant at Wainwright, Alberta, will start a second plant at Moose Jaw, Saskathewan, to be in operation by May 16. A third plant will be established at Vancouver, British Columbia.

ACCIDENT POLICIES

LOS ANGELES, Calif., Apr. 21.—Effective yesterday, the Richfield Oil Co. will issue a travel accident insurance policy to its customers. Any motorist using Richfield products for 1 cent is issued a policy good for 72 hours with a maximum coverage of $10,000 in event of death or major injury. The Federal Life Insurance Co. of Chicago is handling the policies for the company.

LION OIL REFINING CO.

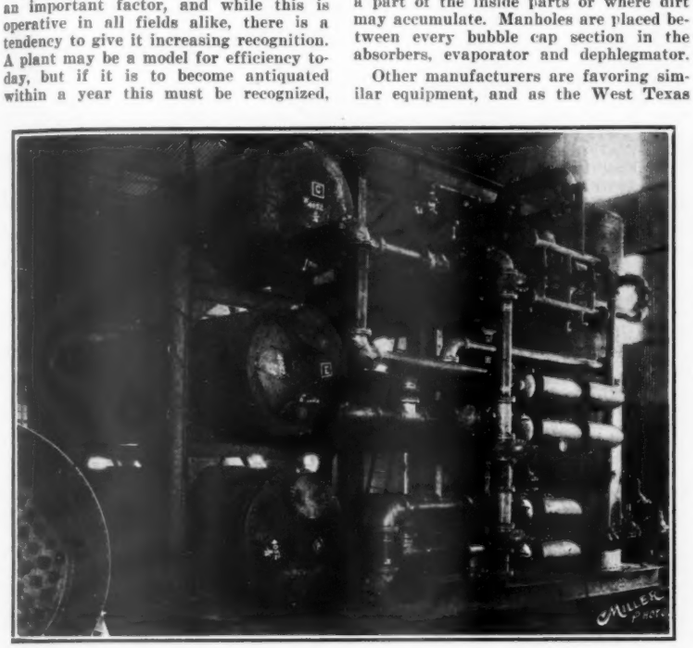
The Lion Oil Co., whose suit against the Sinclair Refining Co. was recently tried in Chicago, is in no way connected with the Lion Oil Refining Co., according to a statement by E. C. Winters, president of the latter company, with offices in Kansas City. The Lion Oil Co. is a jobbing concern with headquarters in Chicago. In the published reports of the trial the names of the two companies were confused.

Natural Gasoline Manufacture

DESIGN UNITS FOR OPERATION IN PANHANDLE AND WEST TEXAS

To meet the unusual conditions existing in the Panhandle Field and West Texas Fields, natural gasoline manufacturers have modified the ordinary type of equipment when installing new units. The scattered production, the low gasoline content of the gas and the corrosive action of the sulphurous gases influence the type of plant chosen.

Obsolescence is also being realized as an important factor, and while this is operative in all fields alike, there is a tendency to give it increasing recognition. A plant may be a model for efficiency today, but if it is to become antiquated within a year this must be recognized, and because of this the "unit type" of plant is favored, and while efficiency is sought in every detail of the design, the investment in the equipment is always held paramount. Compactness, simplicity, high operating efficiency and a minimum investment are the factors influencing the choice of equipment going into the several gasoline plants in these fields.



As the fields are developed, there will be many scattered plants rather than large centralized plants, typical of the Ventura, Calif., Field and the Seminole, Okla., Field. Until the corrosion problem in the West Texas fields is solved, replacements and maintenance will be high in these small plants and standard equipment already fitted and ready to be bolted or welded into place is being favored.

This has been the plan of one of the large Mid-Continent manufacturers at several of its Panhandle plants. A typical unit is shown in the accompanying picture, which was taken at the plant of the manufacturer.

Capacity of Unit

It has a capacity of 20,000 gallons daily, and the complete distillation unit, including the three oil tanks, interchangers, evaporator and dephlegmator, takes up a space of only 22 feet by 39 feet and sits 20 feet high. The absorbers are 7 feet in diameter and, except for the power plant needed to supply steam for the separation of the absorption oil-gasoline mixture and the cooling tower, the entire plant could be placed under one roof. This unit shown, together with the absorbers, weighs but 160,000 pounds and can be loaded on four flat cars.

Chromium nickle steel is used wherever corrosion is excessive. The bubble caps in the evaporator and in the dephlegmator are all made of this metal and another precaution taken in the design of the plant to cut down maintenance is to make all parts standard when possible, making replacements cheap and with a minimum of delay. To facilitate this, manholes are placed at every point where there is a chance for corrosion to eat out a part of the inside parts or where dirt may accumulate. Manholes are placed between every bubble cap section in the absorbers, evaporator and dephlegmator.

Other manufacturers are favoring similar equipment, and as the West Texas and Panhandle fields are developed no doubt already fabricated, unti-type gasoline plants which call for a relatively low investment will be favored.

EMPIRE'S PLANT COMPLETED

Major revisions in the equipment at the Empire Oil & Refining Co.'s gasoline plant at Tallant, Okla., extending over the past six months, have been completed. The original plant was built in 1916 and much of the equipment has become antiquated, so at the time the Cities Service Co. extended its natural gas lines to Kansas City this plant was tied in and practically rebuilt.

NEW PLANT

DENVER, Colo., Apr. 20.—The Angel Peak Oil & Gas Co will build a natural gasoline plant of the absorption type in the Kutz Canon district of San Juan County, New Mexico. The gas will be obtained from three producing wells in that area. The plant will have an initial capacity of 5,000 gallons daily.

OPEN NEW STATION

The Phillips Petroleum Co. opened a bulk and retail station at Spearman, Tex., during the past week and with the completion of this station the Phillips company now has three marketing points in the Texas Panhandle. Other stations have been located at Borger and at Pampa. The company will feature its "Volatile 66" gasoline which carries the slogan "Phill-Up and Fly."

PLANT FOREMEN GIVEN ADVICE

J. H. Dunwoody, of the Pan American Petroleum Co., has given some good advice to foremen in natural gasoline plants and the following is taken from a paper read before the foremen of that company's gasoline plants in California.

"A foreman must clearly understand his duties to the management and the men. He stands next to the workers. Orders, suggestions, and directions reach him through the superintendent, and his success depends upon his having the sympathetic backing of the men under him in carrying out these general orders. Much depends on instructing a man properly when he first begins work, and in helping him along until he gets the run of things.

"Some foremen think that fear is the only way to lead men in a plant. Foremen who swear at their men and 'bawl them out' may keep them in a cowed state of mind, but men thus treated cannot do their best work. Brutality in handling workers is due largely to ignorance and inexperience. My experience tells me that it pays to appeal to intelligence and good will. Men in a plant are influenced by the same motives that effect other people. They can be aroused by ambition, a sense of responsibility, pride in their work and in the plant, and self respect.

"First of all give every man a square deal; show a good example in personal habits, self control, punctuality, obedience to rules, and knowledge of the business. Be considerate but firm. See that all orders and instructions are carefully transmitted to the men. Don't be a knocker; if you have criticisms or suggestions to offer, state them clearly and frankly to the persons responsible. Think of the men under you as human beings. Show them that you are interested in their personal success and welfare."

HONOR MATTHEWS AT ST. LOUIS MEETING

NEW YORK, Apr. 21.—One hundred and fifty members of the Petroleum Divis on of the American Chemical Society tonight attended a dinner in honor of R. R. Matthews, who until last year was chairman of the petroleum division. The dinner was held in connection with the national meeting of the American Chemical Society in session here this week.

Several speakers told of the work of the petroleum division which Mr. Matthews was credited with organizing. As a token of appreciation for his work C. R. Wagner in behalf of the membership presented Mr. Matthews with a gold watch. Mr. Matthews first conceived the idea of organizing the petroleum division about 11 years ago. It was formally organized eight years ago and at the present time is one of the largest divisions of the national organization. Mr. Matthews is connected with the Roxana Petroleum Corp. of this city.

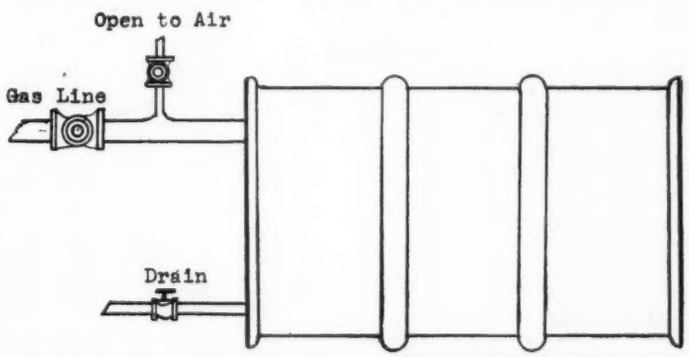
Dr. C. K. Francis presided as toastmaster at the dinner. Among the speakers were Thomas M'dgely, Jr., C. L. Parsons, secretary of the American Chemical Society and Harrison E. Howe, editor of the society's publications.

A Practical Suggestion

A LOW PRESSURE DRIP

The accumulation of liquids through condensation in gathering lines often is an aggravating problem, especially where water is present.

The use of welded pipes as receptacles in the low places on the lines is the general practice. In districts where there is not an extremely high vacuum or high pressure on the lines, the ordinary light iron lubricating oil barrel has been found to give good service as a drip. It is very conveniently and easily



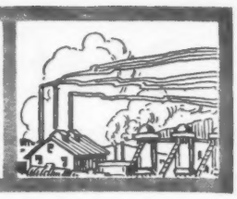
installed. The connections are of standard thread, being 1½ or 2-inch and three-quarters or 1-inch.

The light iron barrel or one time shipper is made of 18-gauge steel and will stand a pressure of 10 pounds and a vacuum of 15 inches mercury. The barrel should be buried to prevent accumulated water from freezing, also if there is a liability of the pressure exceeding 10 pounds, a relief or pop valve of some sort should be used Referring to the drawing, the vent to air connection may be attached to residue gas line.

Should higher pressures or vacuum exist, the heavier barrel (I.C.C. No. 5) can be used. This type of drum is required by the Bureau of Explosives as container for shipping gasoline and is made of 14-gauge steel and constructed to stand an hydrostatic test of 80 pounds.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.



GASOLINE AND NAPHTHA

	Apr. 23		Apr. 17		Apr. 10	
OKLAHOMA (Group 3)—						
50-62 450 endpoint	.06¼	.06½	.06¼	.06⅜	.06¼	
56-58 450 endpoint	.06½	.06⅝	.06½		.06¼	
58-60 450 endpoint	.06⅝		.06⅝		.06¼	.06⅝
*58-60 437 endpoint (U. S. Motor)	.06851		.06838		.06633	
*60-62 437 endpoint	.06798		.06890		.0675	
*60-62 400 endpoint	.07096		.07125		.07172	
*64-66 375 endpoint	.07250		.07062		.07250	
68-70 360 endpoint	.07½		.07½		.07½	
64-66 437 endpoint (blend)	.06¾	.07	.06¾	.06⅞	.06⅝	

*Weighted average prices April 23 as reported by representative refiners. Sales to jobbers only.

NORTH TEXAS—						
56-58 450 endpoint	.06⅜	.06½	.06¾	.06½	.06¼	
58-60 450 endpoint	.06½		.06½		.06¼	
58-60 437 endpoint (U. S. Motor)	.06⅝	.06¾	.06⅝	.06¾	.06½	.06⅝
60-62 400 endpoint	.06⅞	.07⅛	.06⅞	.07	.06⅞	.07
64-66 390 endpoint	.07	.07¼	.07		.07	
64-66 375 endpoint	.07¼		.07¼	.07¼	.07¼	.07¼
68-70 360 endpoint	.07¼	.07¾	.07¼		.07¼	.07⅝
64-66 437 endpoint (blend)	.06¾		.06⅝	.06¾	.06⅜	.06½
NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.07¼		.07¼		.07	.07¼
ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.07	.07¼	.07	.07¼	.07	
PENNSYLVANIA—						
52-54 Naphtha	.08½	.08¾	.08¼	.08½	.07¾	.08
54-56 Naphtha	.08½	.08¾	.08¼	.08½	.07¾	.08
58-60 Gasoline	.08¾	.09	.08¾	.09	.08¼	.08⅜
60 Gasoline	.09	.09¼	.09	.09¼	.08½	.08¾
62 Gasoline	.09¼	.09½	.09¼	.09½	.08¾	.09
64 Gasoline	.09½	.09¾	.09½	.09¾	.09¼	.09½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.10½	.11	.09½	.10	.09	.10
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.06½		.06¼		.06	.06¼
56-58 450 endpoint	.06½		.06¾	.06½	.06¼	.06⅜
58-60 437 endpoint (U. S. Motor)	.06¾	.06⅞	.06¾	.06⅞	.06¾	.06⅞
60-62 400 endpoint	.07	.07⅛	.07	.07⅛	.06⅞	.07
64-66 375 endpoint	.07¼	.07⅜	.07¼		.07⅛	.07¼
68-70 360 endpoint	.07½		.07⅜	.07½	.07⅜	.07½
64-66 437 endpoint (blend)	.06¾	.06⅞	.06⅝	.06¾	.06⅝	.06¾

NATURAL GASOLINE

	Apr. 24		Apr. 17		Apr. 10	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼	.06⅜	.05⅜		.04⅜	.04⅞
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06¼		.05¾		.04⅝	.04¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.05⅝	.05¾	.04½	.04⅝	.03¾	.04
Grade BB, 84-92 375 e p., rec. 85%	.05⅝		.04½		.03¾	.04
Grade C, 80-92, 375 e.p., rec. 78%	.05	.05⅛	.04¼		.03¾	.03⅞
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼		.05⅜		.04⅜	.05
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06¼		.05⅝	.05¾	.04⅝	.04¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.05¾		.04½		.03¾	.04
Grade BB, 84-92, 375 e.p., rec. 85%	.05¾		.04⅜	.04½	.03¾	.04
Grade C, 80-92, 375 e.p., rec. 78%	.05		.04⅛	.04¼	.03¾	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.06½		.06		.04⅞	.05
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅞	.06	.04⅜		.04	.04⅛
Grade C, 80-92, 375 e.p., rec. 78%	.05¼	.05⅜	.04⅜	.04½	.04	
CALIFORNIA—						
75-85, 375-390 endpoint	.08½	.09	.08½	.09	.08	.09
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼		.05¾		.04¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06¼		.05¾		.04⅝	.04¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.05⅝	.05¾	.04½		.03¾	.04
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅝		.04⅜	.04½	.03¾	.03⅞
Grade C, 80-90, 375 e.p., rec. 78%	.05		.04¼		.03¾	

BURNING OIL

	Apr. 24		Apr. 17		Apr.10	
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.05	.05⅛	.05	.05⅛	.04¾	.04⅞
42-44 water white Kerosene	.05¼	.05½	.05⅜	.05½	.05⅛	.05¼
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05½		.05½		.05	
NORTH TEXAS—						
41-43 water white Kerosene	.04¾	.04⅞	.04¾	.04⅞	.04⅝	
40-42 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04⅜	.04½
ARKANSAS—						
41-43 water white Kerosene	.05¼		.05¼		.05	
PENNSYLVANIA—						
43 Kerosene prime white	.06	.06¼	.06	.06¼	.05¾	.06
45 Kerosene water white	.06¼	.06½	.06¼	.06½	.06	.06¼
46 Kerosene water white	.06¾	.07	.06¾	.07	.06¼	.06½
47 Kerosene water white	.06¾	.07	.06¾	.07	.06⅝	.06¾
300 Mineral Seal	.07	.07¼	.07	.07¼	.07	.07¼
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.05½	.06	.05½	.06	.05½	.06
Engine distillate, 43-45 445 endpoint	.08	.08½	.07½	08	.07	.07½
Engine distillate, 42-44 480 endpoint	.07½	.08	.06½	.07	.06½	.07
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.05	.05¼	.05	.05⅛	.05	
42-44 water white Kerosene	.05⅜	.05½	.05½		.05¼	.05½

FUEL OILS

	Apr. 24		Apr. 17		Apr. 10	
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil, per bbl.	.75	.80	.80		.80	
18-22 Fuel Oil, per bbl.	.80	.85	.82½	.85	.82½	.85
22-26 Fuel Oil, per bbl.	.82½	.85	.85		.85	
24-26 Fuel Oil, per bbl.	.85		.85	.87½	.85	.87½
26-30 Fuel Oil, per bbl.	.87½	.90	.90		.90	
28-30 Fuel Oil, per bbl.	.92½	.95	.95		.95	
32-36 Gas Oil (dark)	.02½		.02⅝		.02⅝	
32-36 Gas Oil (straw distillate)	.02⅝		.02⅝		.02⅝	
36-38 Distillate	.03		.03		.03	
38-40 Straw Distillate	.03	.03⅛	.03	.03⅛	.03	.03⅛
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars) per bbl.	.75		.75	.80	.75	.80
32-36 Gas Oil (straw)	.02¾		.02¾		.02¾	
38-40 Straw Distillate	.03		.03		.03	
NORTH LOUISIANA—						
18-20 Fuel Oil, per bbl.	.85	.90	.85	.90	.85	.90
32-36 Gas Oil	.02⅞	.03	.02⅞	.03	.02¾	.03
ARKANSAS—						
33-36 Distillate	.03½	.03¾	.03½	.03¾	.03½	.03¾
32-36 Gas Oil (straw)	.02¾	.03	.02¾	.03	.03	
16-22 Refinery Fuel Oil, per bbl.	.80	.85	.80	.85	.85	.90
GULF COAST (South Texas)—						
Gas Oil	.04¼		.04¼		.04½	
Fuel Oil, per bbl.	1.15		1.15		1.15	
PENNSYLVANIA—						
30-34 Fuel Oil	.04¾	.05	.04¾	.05	.04⅞	.05⅛
36-40 Fuel Oil	.05	.05¼	.05	.05¼	.05	.05¼
CALIFORNIA—						
33-36 Distillate	.03½	.03¾	.03½	.03¾	.03½	.03¾
27-32 Distillate	.02½	.03	.02½	.03	.02½	.03
*15-20 Fuel Oil, Bunker (at tide water)	.85	1.00	.85	1.00	.85	1.00
15-20 Fuel Oil (cargo lots), per bbl.	.75	.85	.75	.85	.75	.85
27 plus Diesel, per bbl.	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3, bbl.	.85	.90	.85	.90	.85	.90
22-26 Fuel Oil (sellers' cars) Group 3, bbl.	.82½	.85	.82½	.87½	.85	
18-22 (Group 3), per bbl.	.77½	.80	.80	.85	.82½	.85
16-20 Smackover, per bbl.	.85	.90	.85	.90	.90	.92½
32-36 Gas Oil (zero)	.02¾	.03	.02¾	.03	.02¾	.03
32-36 Gas Oil (industrial)	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
36-38 Distillate	.03		.03		.03	.03⅛
38-40 Straw Distillate	.03	.03⅛	.03⅛	.03¼	.03⅛	.03¼

*Bunkers.

Due to changes in freight rates which have become effective during the past month Kansas quotations as published in the past will be discontinued. These rate changes have divided the state in regard to interstate shipments to certain sections and have also changed the rate relationship with adjoining groups.

LUBRICATING OIL AND WAX

	Apr. 24		Apr. 17		Apr. 10	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¼	.06½	.06¼	.06½	.06¼	.06½
100 vis., 3 color, 20-25 cold test	.06	.06¼	.06	.06¼	.06	.06¼
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.08	.08¼	.08	.08¼	.08	.08¼
180 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09¾	.09¼	.09¾	.09¼	.09¾
180 vis., 5 color, 23-28 cold test	.09⅛	.09½	.09⅛	.09½	.09⅛	.09½
200 vis., 3 color, 23-28 cold test	.09½	.10½	.09½	.10½	.09½	.10½
200 vis., 4 color, 23-28 cold test	.09⅜	.10¼	.09⅜	.10¼	.09⅜	.10¼
200 vis., 5 color, 23-28 cold test	.09¼	.10	.09¼	.10	.09¼	.10
240 vis., 3 color, 25-30 cold test	.13¾	.14	.13¾	.14	.13¾	.14
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis , 5 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
280 vis., 3 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
280 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
Cylinder Stocks:						
600, steam refined, light green	.08	.09	.08	.09	.08	.09
600, steam refined, dark green	.06	.06½	.06	.06½	.06¼	.06¾
190-200 vis. @ 210 Bright Stock	.28	.29	.28	.29	.30	.32
150-160 vis. @ 210 Bright Stock	.22	.24	.22	.24	.22	.24
Waxes:						
124-126 White Crude Scale Wax	.03¼		.03¼		.03¼	
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom	.07¾	.08	.07¾	.08	.07¾	.08
36 Miners' Neutral	.06½	.06¾	.06½	.06¾	.06½	.06¾
150, 3 color	.27	.27½	.27	.27½	.27	.27½
180, 3 color	.31	.31½	.31	.31½	.31	.31½
200, 3 color	.33½	.34	.33½	.34	.33	.33½
220, 3 color	.34½	.35	.34½	.35	.34½	.35
600, steam refined	.09¼	.09½	.09¼	.09½	.09¼	.09½
635, steam refined	.10¼	.10½	.10¼	.10½	.10¼	.10½
650, steam refined	.11	.11½	.11	.11½	.11	.11½
600, Pennsylvania flash	.14	.15	.14	.15	.14	.15
*550, E filtered	.14½	.15	.14½	.15	.14½	.15
*600, E filtered	.15½	.15¾	.15½	.15¾	.15½	.15¾
600, E filtered	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼
600, D filtered	.22	.23	.22	.23	.22	.23
550, E filtered	.15½	.16	.15½	.16	.15½	.16
550, D filtered	.21½	.22	.21½	.22	.21½	.22
Pennsylvania Bright Stock	.28	.28¼	.27	.27½	.26½	.27
†122-124 White Crude Scale Wax	.03⅜	.03½	.03⅜	.03½	.03¼	.03⅜
†124-126 White Crude Scale Wax	.03⅜	.03½	.03⅜	.03½	.03¼	.03⅜

*At Warren, Pa. †At New York.

GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.07½	.08	.07½	.08	.07½	.08
No. 2 color, 200 vis., pale oil	.09½	.10	.09½	.10	.09½	.10
No. 3 color, 300 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 3½ color, 500 vis., pale oil	.12	.13	.12	.13	.12	.13
No. 4 color, 750 vis., pale oil	.14	.15	.14	.15	.14	.15
No. 5 to 6 color, 200 vis., red oil	.07½	.08	.07½	.08	.07½	.08
No. 5 to 6 color, 300 vis., red oil	.08½	.09	.08½	.09	.08½	.09
No. 5 to 6 color, 500 vis., red oil	.10	.10½	.10	.10½	.10	.10½
No. 5 to 6 color, 750 vis., red oil	.12	.12½	.12	.12½	.12	.12½
No. 2½ color, 200 vis., pale filtered	.11½	.12	.11½	.12	.11½	.12
No. 2½ color, 300 vis., pale filtered	.13	.13½	.13	.13½	.13	.13½
No. 2½ color, 500 vis., pale filtered	.15	.15½	.15	.15½	.15	.15½
No. 2½-3 color, 750 vis., pale filtered	.17½	.19	.17½	.19	.17½	.19

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

CALIFORNIA—						
130 vis., 2½-3 color	.09	.10	.09	.10	.09	.10
200 vis., 2½-3 color	.10	.10½	.10	.10½	.10	.10½
300 vis., 3-3½ color	.10½	.11	.10½	.11	.10½	.11
350 vis., 3½-4 color	.11	.12	.11	.12	.11	.12
400 vis., 3½-4 color	.13	.14	.13	.14	.13	.14
Red Neutral:						
200 vis., 4½-5 color	.08½	.09	.08½	.09	.08½	.09
300 vis., 5-6 color	.09	.10	.09	.10	.09	.10
400 vis., 5-6 color	.10½	.11	.10½	.11	.10½	.11
500 vis., 4½-5 color	.11½	.12	.11½	.12	.11½	.12
500 vis., 5-6½ color	.11	.11½	.11	.11½	.11	.11½
600 vis., 6 plus color	.12½	.13	.12½	.13	.12½	.13

Note: Bright Stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Apr. 24	Apr. 17	Apr. 10
Gasoline, U. S. Motor, 58-60 437	.09½	.09¼	.09¼
Kerosene, water white, 41-43	.07½	.07½	.07½
*Fuel Oil, bunker "C," 14-16, per bbl.	1.35	1.35	1.35
*Fuel Oil, Diesel, 28-30, per bbl.	2 00	2 00	2.00
Gas Oil, 28 plus	.05¼	.05½	.05¼
25 pale Paraffin Oil	.12	.12	.10¾
28 pale Paraffin Oil	.07	.07	.07¼
285 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.10½	.10½	.10½
225 red Paraffin Oil	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.03⅞	.04	.03¾
125-127 a.m.p., per lb.	.04⅛	.04⅛	.04
130-132 a.m.p., per lb.	.04½	.04½	.04¾
135-137 a.m.p., per lb.	.06⅛	.06⅛	.06
Petrolatum, in bbls., carload lots, per lb.:			
Dark green	.02	.02	.02
Amber	.03¼	.03⅜	.03⅜
Extra amber	.03¾	.03¾	.03¾
Cream	.06⅜	.06½	.06½
Lily White	.08	.08¼	.08¼
Snow White	.08½	.09¼	.09¼

*Lighterage, 6.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Apr. 24	Apr. 17	Apr. 10
Gasoline, U. S. Motor, 58-60 437, in cases	.2540	.2515	.2515
Kerosene, standard white, in cases	.1740	.1715	.1715
Kerosene, water white, in cases	.1840	.1815	.1815
600, steam refined cylinder stock, in bbls.	.16¾	.16¾	.16½
635, steam refined	.18	.18	.18
650, steam refined	.18½	.18½	.18½
600, Pennsylvania flash	.22	.22	.22
630, Pennsylvania flash	.34	.34	.34
600, Warren E	.24	.24	.24
600, Oil City E	.23	.23	.23
Light 135 Bright Stock	.36	.37	.36
Dark 135 Bright Stock	.34	.35	.34

LOS ANGELES EXPORT PRICES

	Apr. 24		Apr. 17		Apr. 10	
Kerosene, water white	.05	.05¼	.05	.05¼	.05	.05¼
U. S. Motor Gasoline, 53-55 437 e.p.	.07¼	.07½	.06½	.07½	.06¼	.06½

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

*Corsicana heavy (March 14, 1927).....$1.00
Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE
Carson and Hutchinson

Below 31 gravity	$ .60
31-31.9	.65
32-32.9	.70
33-33.9	.73
34-34.9	.76
35-35.9	.79
36-36.9	.82
37-37.9	.85
38-38.9	.88
39-39.9	.91
40-40.9	.94
41-41.9	.97
42-42.9	1.00
43-43.9	1.03
44 and above	1.06

Wheeler County

Below 29 gravity	$ .60
29-29.9	.65
30-30.9	.70
31-31.9	.75
32-32.9	.80
33-33.9	.83
34-34.9	.86
35-35.9	.89
36-36.9	.92
37-37.9	.95
38-38.9	.98
39-39.9	1.01
40-40.9	1.04
41-41.9	1.07
42-42.9	1.10
43-43.9	1.13
44 and above	1.16
Gray County	See gravity table

Humble Oil & Refining Co. Magnolia Petroleum Co. February 21.

*Iatan	Same as North Texas
Crane-Upton-Crockett	See gravity table
†Glasscock	$ .60
†Chalk	.80

*Includes Howard County and Westbrook Fields. Mariand Refining Co. pays $1.05 for Howard County crude, effective May 21.
†Magnolia Petroleum Co., Jan. 14, 1928.

ARKANSAS-NORTH LOUISIANA

*Cotton Valley (Below 36 gravity April 11)	$ .75
Bellevue (Feb. 24, 1927)	1.20
Urania (Nov. 18, 1927)	.75
East El Dorado (March 16, 1927)	1.00
Other fields	See gravity table

*Cotton Valley crude above 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Cotton Valley and Bellevue, Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co. and Magnolia Petroleum Co.; (Magnolia Petroleum Co. posted Cotton Valley February 8); Urania, Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co., Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, High Island, Pierce Junction and Spindletop.)

†Grade A (March 14)	$1.20
Grade B	See gravity table
*Jennings, La. (March 14)	$1.05
†Saratoga, Batson, Daytona (March 14, 1927)	$1.20
‖Markham (March 14)	1.00

*Gulf Pipe Line Co. †Sun Pipe Line Co. ‡Humble Oil & Refining Co. and other major buyers. ‖The Texas Company.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

*Luling (May 5)	$1.00
†Mirando (March 14)	1.00
Rockdale-Minerva (April 15):	
Below 38 gravity	1.25
38-39.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31

(Continued on Page 148)

CRUDE OIL GRAVITY TABLE

Gravity—	Okla., Kans. N. C. Tex. 1	No. La. and Arkansas 2	Smackover, Ark. 3	Stephens, Ark. 4	Gray County (Texas Panhandle) 5	Crane, Upton, Pecos, Crockett, Irion, Winkler Counties (West Texas) 6	Salt Creek, Wyo. 7	Grade B & Light Crude (G. Coast) 8	Somerset (South Central Texas) 9
24 and above	....	....	.90	....	....	....	....	....	....
Below 24	.76	....	.75	....	....	....	....	....	....
Below 26	....	....	....	....	....	....	....	1.15	....
24 to 24.9	.76	....	....	....	....	....	....	....	....
25 to 25.9	.81	....	....	....	....	....	....	....	....
Below 26	....	....	....	....	.60	.60	....	....	....
26 to 26.9	.86	....	....	....	.60	.60	....	1.19	....
27 to 27.9	.91	....	....	....	.65	.60	....	1.21	....
Below 28	....	.91	....	.85	....	....	....	....	....
28 to 28.9	.96	.96	....	.87	.70	.60	....	1.23	....
29 to 29.9	1.01	1.01	....	.89	.75	.60	1.01	1.25	....
30 to 30.9	1.06	1.06	....	.91	.80	.60	1.06	1.27	....
31 to 31.9	1.11	1.11	....	.93	.85	.60	1.11	1.29	....
32 to 32.9	1.16	1.16	....	.95	.90	.60	1.16	1.31	1.04
33 to 33.9	1.19	1.19	....	....	.93	.60	1.19	1.33	1.07
34 to 34.9	1.22	1.22	....	....	.96	.60	1.22	1.35	1.09
35 to 35.9	1.25	1.25	....	....	.99	.60	1.25	1.37	1.11
36 to 36.9	1.28	1.28	....	....	1.02	.60	1.28	....	1.13
37 to 37.9	1.31	1.31	....	....	1.05	....	1.31	....	1.14
38 to 38.9	1.34	1.34	....	....	1.08	....	....	....	1.17
39 to 39.9	1.37	1.37	....	....	1.11	....	....	....	....
40 to 40.9	1.40	1.40	....	....	1.14	....	....	....	....
41 to 41.9	1.43	1.43	....	....	1.17	....	....	....	....
42 to 42.9	1.46	1.46	....	....	1.20	....	....	....	....
43 to 43.9	1.49	1.49	....	....	1.23	....	....	....	....
44 to 44.9	1.52	1.52	....	....	1.26	....	....	....	....
45 to 45.9	1.55	1.55	....	....	....	....	....	....	....
46 to 46.9	1.58	1.58	....	....	....	....	....	....	....
47 to 47.9	1.61	1.61	....	....	....	....	....	....	....
48 to 48.9	1.64	1.64	....	....	....	....	....	....	....
49 to 49.9	1.67	1.67	....	....	....	....	....	....	....
50 to 50.9	1.70	1.70	....	....	....	....	....	....	....
51 to 51.9	1.73	1.73	....	....	....	....	....	....	....
52 and above	1.76	1.76	....	....	....	....	....	....	....

Column 1—Magnolia Petroleum Co. posted schedule February 21, 1928, making price below 30 gravity $.75 per barrel, 30-30.9 gravity $.90 and 31-31.9 gravity $1.05, with 3 cents increase per degree higher in gravity, taking 32-32.9 gravity at $1.16 as basis, with a top price of $1.76 for 52 and above.

Humble Oil Refining Co. posted $1.52 on all oil 44 gravity and above.

Oklahoma—Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., Carter Oil Co., The Texas Company, February 21.

North Central Texas—[Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas), Iatan and Panola (Magnolia) only. Iatan posted a flat price of $.93 by Magnolia on January 14, 1928). Currie, Nocona, Moran and Corsicana light]; Texas, Prairie, Sinclair and Gulf; The Texas Company, Humble Oil & Refining Co., February 21.

Kansas—Prairie, Sinclair; Carter, The Texas Company, February 21.

Column 2—Arkansas and North Louisiana—[Caddo, Bull Bayou, Crichton, De Soto, Haynesville, Homer and El Dorado only]; Standard Oil Co. of Louisiana, Texas Pipe Line Co., Louisiana Oil Refining Co., February 21 and Magnolia Petroleum Co., February 23.

Column 3—February 6, Louisiana Oil Refining Co. February 7, Standard Oil Co. of Louisiana, The Texas Company, Gulf Refining Co., Magnolia Petroleum Co. February 8, and Atlantic Production Co. February 10.

Column 4—Atlantic Oil Producing Co., Louisiana Oil Refining Corp., The Texas Company, February 22.

Column 5—Humble Oil & Refining Co., Magnolia Petroleum Co., February 21.

Column 6—Humble Oil & Refining Co., August 23; Mariand Refining Co., Magnolia Petroleum Co., and Gulf Pipe Line Co., August 24.

Column 7—Midwest Refining Co., February 21. All crude over 37 gravity, $1.31 per barrel.

Column 8—Humble Oil & Refining Co. and other major buyers (schedule ends "35 and above"), March 14, with exception of Magnolia Petroleum Co., which stops at 31 degrees gravity. Sun Pipe Line Co. posted 2 cents differential for each degree above 35 gravity and $1.47 for 40 gravity and above.

Column 9—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective April 1, 1927)*

Gravity—	Fullerton, Seal Beach, Long Beach, Huntington Beach, Richfield, Rosecrans-Dom'guez, Torrance-Inglewood 1	Whittier, La Habra, Montebello 2	Kern River, Newhall-McKittrick, Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills, Coyote 3	Santa Fe Springs 4	Coalinga 5	Wheeler Ridge 6	Santa Maria, Ventura, Orcutt, Salt Lake 7
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.85	.85	.75	.85	....	.75	.75	.85
16°	.85	.85	.75	.85	....	.75	.75	.85
17°	.85	.85	.75	.85	....	.75	.75	.85
18°	.85	.85	.75	.85	....	.75	.75	.85
19°	.85	.85	.75	.85	....	.75	.75	.85
20°	.85	.85	.77	.85	....	.76	.76	.85
21°	.86	.85	.79	.86	.85	.77	.77	.85
22°	.87	.85	.81	.87	.85	.78	.78	.85
23°	.88	.85	.83	.88	.85	.79	.79	.86
24°	.89	.85	.85	.89	.85	.80	.80	.86
25°	.90	.86	.87	.90	.86	.81	.81	.86
26°	.92	.87	.89	.91	.87	.83	.82	.87
27°	.94	.88	.91	.92	.88	.85	.83	.88
28°	.96	.89	.93	.93	.89	.87	....	.89
29°	.98	.90	.96	.94	.91	.89	....	.91
30°	1.00	.91	.99	.95	.93	.91	....	.93
31°	1.03	....	1.02	....	.95	.93	....	.95
32°	1.06	....	1.05	....	.97	.95	....	.97
33°	1.09	....	1.08	....	.99	.97	....	.99
34°	1.12	....	1.11	....	1.01	.99	....	1.01
35°	1.15	....	....	....	1.03	1.01	....	1.03
36°	1.18	....	....	....	1.06	....	....	1.06
37°	1.21	....	....	....	1.09	....	....	1.09
38°	1.24	....	....	....	1.12	....	....	1.12
39°	1.27	....	....	....	1.15	....	....	1.15
40°	1.30	....	....	....	....	....	....	....
41°	1.33	....	....	....	....	....	....	....
42°	1.36	....	....	....	....	....	....	....

*Column 1—Long Beach, Seal Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richland and Fullerton, 14 to 30 degrees; Torrance and Inglewood, 14 to 28 degrees; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.

Column 2—Whittier crude, 14 to 22 degrees; Montebello, 14 to 30 degrees.

Column 3—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset, Buena Vista and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.

Column 8—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura and Orcutt, 14 to 39 degrees. Posted by Union Oil Co.

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns April 24.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago dist. ..	14.0	16.0	...	12 0
Decatur, Ill. ..	14.2	16.2	...	12.1
St. St. Louis ...	13.1	15.35	...	11.2
Joliet	14.4	16.4	...	12.3
Peoria	14.2	16.2	...	12.1
Quincy	14.2	16 2	...	11.9
Davenport, Ia..	17 5	19.5	3.0	12.3
Des Moines ...	17.5	19.5	3.0	12.3
Keokuk	17.5	19.5	3.0	12.3
Sioux City	17.1	19.1	3.0	11.9
Duluth, Minn. ..	17.5	19.5	2.0	12.9
Minneapolis ...	16.0	18.0	2.0	12.9
Mankato	14.1	16.1	2.0	12.7
La Crosse, Wis.	17.2	19.2	2.0	13.0
Milwaukee	16.1	18.1	2.0	11.9
Madison	16.3	18.3	2 0	12.1
Detroit, Mich. ..	17.8	19.8	3.0	13.7
Grand Rapids .	17.7	19.7	3.0	13.6
Saginaw	17.9	19.9	3.0	13.8
Evansville, Ind.	17.0	19 0	3.0	13.0
Fort Wayne	16.4	17.4	3.0	13.4
Indianapolis ...	17.2	19.2	3.0	12.2
South Bend ...	17.4	19.4	3.0	13.4
Fargo, N. D. ..	18.9	20.9	2.0	14 9
Huron, S. D. ..	19.5	21.5	4.0	13.9
Sioux Falls ...	18.0	20.0	4.0	13 4
K. C., Mo.* ...	16.9	18.9	3.0	10.6
Springfield* ...	16 8	18.8	3.0	11.5
St. Louis*	15.6	17.9	2.5	11.3
St. Joseph* ...	16.5	18.5	3.0	11.3
Wichita, Kans..	14.8	16.8	2.0	10.8
Bartlesville, Ok.	15.5	17.5	3.0	10.5

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	14.7	9.5
V. M. & P. naphtha	16.2	11.0
Cleaner's naphtha	18.0	12.0
Stanisol	19.0	12.5

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Les than 100 gallons	9.0
100 to 799 gallons	8 0
800 or more gallons	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

Tank wagon prices of gasoline subject to discount of 1 cent a gallon on dumps of 50 gallons or more throughout territory except Chicago district where discount applies only to dumps of 100 gallons. Kerosene subject to 1 cent discount on dumps of 50 gallons or more.

Outside the Chicago district, the following quantity discount schedule is in effect on monthly tank wagon deliveries of gasoline: 6,000 gallons or more, 1¼ cents; 10,000 gallons or more, 2 cents; 15,000 gallons or more, 3 cents. These discounts include the 1 cent allowed on dumps of 50 gallons or more at one delivery.

Within the Chicago district, the following quantity discount schedule is in effect on tank wagon deliveries of gasoline, 750 to 2,000 gallons, one-half cent; 2,000 to 3,000 gallons, three-fourths cent; 3,000 to 6,000 gallons, 1 cent; 6,000 to 10,000 gallons, 1¼ cents; 10,000 to 15,000 gallons, 2 cents; 15,000 gallons or more, 3 cents. These discounts are in addition to the special discount of 1 cent on dumps of 100 gallons or more at one delivery.

If the quantity bought during the year is equal to or exceeds 12 times the agreed monthly quantity, the discount is paid or credited on the entire quantity at the close of the term less the monthly payments made during the year.

*State tax 2 cents; remainder city tax.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
All Ohio points.	17.0	19 0	3.0	14.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.*

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex. ...	14.0	18.0	3.0	11.0
Fort Worth ...	15.0	18.0	3.0	11.0
Houston	14.0	18.0	3.0	15.0
San Antonio ..	15.0	18.0	3.0	10.0
El Paso	17.0	20.0	3.0	16.0
Texarkana ...	16.0	20.0	3.0	12.0
Muskogee, Ok..	17.0	18.0	3.0	11.0
Okla. City	16.0	17.0	3.0	11.0
Tulsa	15.0	17.0	3.0	11.0
Ft. Smith, Ark.	18 0	20.0	5.0	12.0
Little Rock ...	20.0	22.0	5.0	12.0

*The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, one-half cent; over 2,000 gallons, three-quarters cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cent; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons a month, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases in the tank wagon discounts.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	16.5	18.5	3.0	14.0
Baton Rouge ..	15.0	17.0	3.0	12.5
Alexandria	16.0	18.0	2.0	14.0
LaFayette	16.0	18.0	2 0	12.5
Lake Charles .	16.5	18.5	2.0	14.0
Shreveport ...	16.5	18.5	2.0	13.0
Knoxville, Tenn.	18.0	20.0	3.0	15.0
Memphis	17.0	19.0	3.0	14.0
Chattanooga ...	18.0	20.0	3.0	15.0
Nashville	18.0	20.0	3.0	15.0
Bristol	19.0	21.0	3.0	14.0
Lit. Rock, Ark..	20.0	22.0	5.0	12.0

*Tax of 3 cents includes city tax of 1 cent. †Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga. ..	17.0	19.0	4.0	14.0
Augusta	19.0	22.0	4.0	16.5
Macon	16.0	19.0	4.0	13.5
Savannah	17.0	19.0	4 0	14.5
Birm'ham, Ala.	18.0	21.0	4.0	14.5
Mobile	17.0	20.0	4.0	14.0
Montgomery ..	16 0	19.0	5.0	15.5
Clarke'le, Miss..	17.0	20.0	4.0	11.5
Jackson	17.0	20.0	4.0	11.5
Natchez	16.5	19.5	4.0	14.0
Gulfport	18.5	21.5	6.0	14.0
Vicksburg	16.5	19.5	4.0	14.0
Jack'ville, Fla..	19.0	21.0	5.0	11.5
Miami	20.0	23.0	5.0	14.5
Pensacola	19.0	22.0	5.0	13 0
Tampa	18.0	21.0	5.0	13.0
Lexington, Ky..	18 0	21.0	5.0	15.5
Covington	19.0	22.0	5.0	15.5
Louisville	18.0	21.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline. Kero ene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene only. Pensacola tax includes 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa..	16.0	*22.0	...	13.0
Philadelphia ..	16.0	*22.0	...	13.0
Scranton	16 0	*22.0	...	13.0
Allentown	16.0	*22.0	...	13 0
Altoona	16.0	*22.0	...	13.0
Erie	12.0	*18.0	...	13.0
Dover, Del. ...	19 0	22 0	3.0	13.0
Wilmington ...	19.0	22.0	3.0	12.0
Spring'd, Mass.	18.0	18.0	...	15.0
Worcester	18.0	18.0	...	15.0
Boston	18.0	18.0	...	15.0
Providence ,R.I.	20.0	20.0	2.0	15.0
Hartford, Conn.	20.0	20.0	2.0	14.0
New Haven ...	20.0	20.0	2.0	15.0

*Includes tax of 3.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y. .	17.0	19.0	...	15.0
New York* ...	17.0	19.0	...	15.0
Buffalo	15.0	18.0	...	14.0
Rochester	15.0	18.0	...	14.0
Syracuse	17.0	19.0	...	15.0
Boston, Mass. .	18.0	19.0	...	15.0
Augusta, Me. ..	21.0	23.0	4.0	15.0
Manch't'r, N. H.	21.0	22.0	4.0	15.0
Burlington, Vt..	20.0	22.0	3.0	15.0

*Prices in steel barrels.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	15.25	17.25	2 0	12.25
McCook	14.75	14.75	2.0	11.50
Norfolk	16.75	18.75	2.0	12.75
N. Platte	17.75	19.75	2.0	13.50
Scottsbluff	17.25	19.25	2.0	13.00

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco .	17.0	21.0	3.0	15.5
Pueblo	18.0	18 0	3.0	15.5
Los Angeles ...	16.5	20.5	3.0	15.5
Reno, Nev.	22.0	26.0	4.0	19.0
Portland, Ore..	17.5	21.5	3.0	16.5
Seattle, Wash..	16.5	20.5	2 0	16.5
Tacoma	16.5	20.5	2.0	16.5
Spokane	20.5	24.5	2.0	20.5
Phoenix, Ariz..	23.0	27.0	4.0	20.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlant'c City ..	18.0	20.0	2.0	14.0
Newark, N. J. .	18.0	20.0	2.0	14.0
Annapolis, Md..	20.0	23.0	4.0	14.0
Baltimore	20.0	23 0	4 0	12.0
Cumberland ...	20.0	23.0	4.0	14.0
Washington ...	18.0	21.0	2.0	14.0
Danville, Va. ..	21.0	..	5.0	14.0
Norfolk	21.0	24.0	5.0	14 0
Petersburg	21.0	24.0	5.0	14.0
Roanoke	21.0	24.0	5.0	14.0
Richmond	19.0	22 0	5.0	14.0
Ch'rist'n, W.Va.	20.0	23.0	4.0	14.0
Keyser	20.0	23.0	4.0	14.0
Parkersburg ..	18.0	21.0	4.0	14.0
Wheeling	20.0	23.0	4.0	14.0
Charlotte, N. C.	20.0	23.0	4.0	14.0
Hickory	20.0	20.0	4.0	14.0
Mt. Airy	20.0	20.0	4.0	14.0
Salisbury	20.0	20.0	4.0	14.0
Charl'ston, S. C.	20.0	23 0	5.0	14.0
Columbia	20.0	23.0	5.0	14.0

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo. ..	17.0	19.0	3.0	14.5
Pueblo	17.0	18.0	3.0	14.5
Grand Junction	20.5	22.5	3.0	18.0
Casper, Wyo. ..	17.0	19.0	3.0	13.0
Cheyenne	18.0	20 0	3.0	14.5
Butte, Mont. ..	22.5	22.5	3.0	19.0
Helena	22.5	24.5	3.0	19.0
Salt Lake, Utah	20.0	22.0	3.5	17 0
Albu'que, N. M.	22.0	25.0	5.0	17.0
Boise, Idaho ..	23.5	25.5	4.0	19 0
Twin Falls	23.5	25.5	4.0	19.0

TANK WAGON CHANGES

April 19.—Standard Oil Co. of Indiana increased the gasoline tank wagon and station prices 2 cents in Des Moines, Iowa, and Minneapolis, Minn., to 17.5 and 19.5 cents. Magnolia Petroleum Co. decreased the gasoline tankwagon at Tulsa 1 cent to 15 cents.

April 21.—Magnolia Petroleum Co. advanced the gasoline station price 1 cent to 22 cents at Little Rock, Ark.

April 25.—Standard Oil Co. of Indiana increased the gasoline tank wagon and station price 2 cents in St. Joseph, Mo., to 16.5 and 18.5 cents.

SHREVEPORT MARKETS SHOW LITTLE CHANGE

SHREVEPORT, La., Apr. 23.—Except for continued growth of the seasonal increase in orders, no change was apparent in the refined oil market in this division during the week. Prices all down the line remained as they were at the beginning of the period except that fuel oil is beginning to show a weaker tendency. Vague rumors of a possible advance in crude oil prices, which it has been impossible to run down, gave refiners a hook on which to hang hopes of an improvement in the present fuel situation, that commodity being quoted at 80 to 95 cents, the lowest it has reached in some time.

TEXAS PACIFIC ELECTION

La Rue Smith of Casper, Wyo., was added to officers of the Texas-Pacific Coal & Oil Co. as a vice president in the annual meeting held at Thurber, Tex., and R. Seibel, treasurer, was made secretary-treasurer. Herman W. Knox, former secretary, has retired. Ellison Harding was added to the board.

Other officers and directors were re-elected: Edgar J. Marston, president; J. Robey Penn, chairman of the executive committee; O. E. Mitchell, vice president, and E. R. Lederer, vice president.

OXFORD REVIEW DENIED

WASHINGTON, D. C., Apr. 21.—The Oxford Oil Co. and J. G. Bass were refused by the Supreme Court a review of their $2,000,000 claim against the Atlantic Oil Producing Co. and others, which they lost in federal district court at Dallas, Tex. As owners of a narrow strip of land in Navarro County, Texas, the oil company and Bass contended that the Texas Railroad Commission illegally refused them permission to drill offset wells to protect it from drainage through operations of the Atlantic and other oil companies on adjoining land.

CRUDE OIL PRICES

(Continued from Page 147)

*Thrall	...
Caldwell (May 15)	1.75
Lytton Springs (Lockhart). See gravity table	
Somerset ..... See gravity table	

*Posted by Magnolia Petroleum Co. Thrall prices same as North Central Texas less 19¼ cents per cwt. freight.

†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.—Midwest Refining Co.

(Effective March 14)

Rock Creek, Wyo. (March 12)	$1.25
Salt Creek	See gravity table
Big Muddy (March 12)	$1.25
Mule Creek (May 1)	1.10
Grass Creek, heavy	.90
Grass Creek, light	1.32
Elk Basin (March 12)	1.33
Lance Creek (March 12)	1.33
Poison Spider	1.33
Notches	1.00
Rex Lake (February 22)	.65
Osage	1.10
Lost Soldier (contract)	1.33
Greybull-Torchlight	.95
Hamilton Dome	.133
Cat Creek (Mont.)	.85
Sunburst (Mont.) (Jan. 25, 1928)	1.33
Artesia (March 12)	1.50
Hogback (N. Mex.) (March 14)	1.33

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES

Joseph Seep Purchasing Agency

(Effective December 17)

Penna Grade Oil in New York Transit Line (New York)	$2.280
Bradford District Oil in National Transit Lines (Pennsylvania)	2.80
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.66
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	2.65
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.60
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.35
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (February 9, 1928)	1.35
Corning 35-cent grade oil in Buckeye Pipe Line Co.'s line (December 19)....	1.45
Corning 25-cent grade oil in Buckeye Pipe Line Co.'s lines (December 19)..	1.45
Somerset Oil in Cumberland Pipe Line lines (Kentucky) (February 9, 1928).	1.45
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (August 1)....	.95
Keister (Pennsylvania) (August 1)	1.10

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective March 14, 1927)

Lima (February 10)	$1.55
Wooster	1.57
Illinois (February 23, 1928)	1.50
Indiana (February 10, 1928)	1.32
Princeton (February 23, 1928)	1.50
Plymouth (February 23, 1928)	1.23
Waterloo (November 17, 1926)	1.35
*Western Kentucky	.182
**Saginaw, Mich., Saginaw Sand (February 10)	1.89
**Saginaw, Mich., Beren Sand (February 10)	1.79
†Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 16)	1.50
‡Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (March 16, 1927)....	1.50
§Oil Springs (Canada) (February 10, 1928)	2.02
§Petrolia (Canada) (February 10, 1928)	1.95

*Posted by Ohio Oil Co.
†Posted by Paragon Development Co.
‡Posted by Stoll Oil Refining Co.
§Posted by Imperial Oil Co., Ltd.
**Posted by Sun Oil Co.

MEXICAN CRUDE

Note—Due to the fact that the exportation of Tuxpam light crude oil has become a negligible factor, prices will no longer be published.

*Panuco heavy (f.o.b. Mexican ports)..$1.15

*$.15.

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Oil Securities Continued Activity

Volume of Oil Issues Again a Feature of the Market. Majority Showed Slight Gains During Week

The oil securities were again active last week, although they showed slight variations from their position, the majority of them registering slight gains. The daily volume in the oil issues was the feature.

Maracaibo Oil

Statement of Maracaibo Oil Exploration Corp. and subsidiaries as of December 31, 1927, shows total assets of $4,233,608 compared with $4,162,336 at the end of 1926. Capital stock and surplus totaled $4,233,608 against $4,162,336 in preceding year.

Consolidated balance sheet of Maracaibo Oil Exploration Corp. and subsidiaries as of December 31, 1927, compares as follows:

Assets	1927	1926
Prop., pl. and eq.*	$2,744,984	$2,610,375
Cash	543,868	1,148,107
Call loans	100,000	.....
Accts. rec.	358	5,135
Secur. owned	416,875	.....
Def. assets	427,523	398,719
Total	$4,233,608	$4,162,336
Liabilities		
Sap. stk. and surp.	†$4,233,608	†$4,162,336
Total	$4,233,608	$4,162,336

*After depreciation. †Represented by 330,000 no-par shares.

Houston Oil

Directors of Houston Oil Co. have called a special meeting of stockholders for May 10 at Houston to act on increasing common stock by not exceeding 60,000 shares. The additional stock will be used to provide for conversion of a new issue of 10-year 5½ per cent debentures.

Authorized issue of debentures will be $10,000,000, but only $8,000,000 will presently be issued. Proceeds of the debentures will be used to retire $6,833,000 of 6½ per cent notes, to reimburse treasury for advances to Houston Pipe Line Co., a subsidiary, and to provide for general corporate

The new debentures will be convertible into common stock at $166.66 a share. The additional stock will be offered to stockholders at that price. However, in view of the fact that market price is $150 a share, it is not likely the right to subscribe to stock will be exercised. Also, as it is not probable the convertible feature of the new debentures will be availed of because market price is under conversion price, it is unlikely any of the stock will be issued, but will be held for conversion of debentures when such privilege becomes attractive. The debentures will be underwritten but not the stock.

The new financing will save Houston Oil Co. about $80,000 annually in interest charges.

Union Oil of California

Preliminary statement of Union Oil of California for quarter ended March 31, 1928, estimates net income at $2,500,000 after depreciation, depletion, interest, taxes, etc., equivalent to 66 cents a share (par $25) earned on 3,791,924 shares of stock. This compares with $2,600,000 or 68 cents a share on 3,788,618 shares in first quarter of 1927.

Profit of Union Oil of California for quarter ended March 31, 1927, was $4,800,000 after interest, federal taxes, etc., but before depreciation, depletion and drilling expenses comparing with $5,150,000 in first quarter of 1927.

Preliminary income account for quarter ended March 31, 1928, compares as follows:

	1928	1927
Sales	$19,370,000	$18,070,000
Profit*	4,800,000	5,150,000
Depr., depl., etc.	2,300,000	2,550,000
Net inc.	$2,500,000	$2,600,000

*After interest, federal taxes, etc.

Henry M. Robinson, president of Union Associates, which controls Union Oil Co., officially denies Union Oil is to enter into any merger, or contemplates such action.

Arkansas Gas Corp.

Transfer books of Arkansas Natural Gas Co. have been closed. Stock may be deposited with Colonial Trust Co. of Pittsburgh for exchange into stock of the new Arkansas Natural Gas Corp. under the merger agreement.

Shaffer Oil & Refining

Stockholders of Shaffer Oil & Refining Co., subsidiary of Standard Gas & Electric Co., approved increase in authorized stock to 1,000,000 shares of no par common and 450,000 shares of no par preferred from 460,000 shares of no par common, 40,000 of $1 par class A common and 450,000 shares of $100 par preferred stock.

Giving effect to these changes and recent issuance of $10,000,000 notes and retirement of old funded obligations, outstanding capitalization will consist of $10,000,000 of 6 per cent convertible notes, due March 1, 1933; 50,000 shares no par $7 cumulative convertible preferred and 580,000 shares no par common stock. Former capital was $13,593,700 of 6 per cent notes and bonds, $14,000,000 of 7 per cent preferred, 40,000 shares class A common and 137,552 shares of common.

It is proposed to issue common stock in exchange for $9,000,000 of preferred stock, certain funded debt, open accounts and outstanding common stocks.

John J. O'Brien, president, in letter to stockholders stated: "While outstanding preferred will carry no participation privilege, it will have right of conversion, at any time, into common stock on basis of two shares of present common for each share of such preferred stock."

Cities Service Co.

Report of Cities Service Co. for year ended December 31, 1927, shows surplus available for common stock and reserves of $22,604,925 after providing for taxes, interest and preferred dividends, against $15,611,466 in 1926. Capital stock outstanding consists of 1,034,951 no par shares of $6 cumulative preferred stock, 375,240 no par shares 60-cent cumulative preference B stock, 62,895 shares $6 cumulative preference B stock and 4,250,229 shares (par $20) common stock.

Income account of Cities Service Co. for 1927 compares as follows:

	1927	1926
Gross earn.	$33,061,062	$25,438,362
Net aft. exp.	31,952,951	24,462,662
Bal. aft. int.	29,412,831	21,804,271
Preferred divs.	6,807,906	6,192,805
Sur. for com. and res.	22,604,925	15,611,466

Combined statement of earnings of Cities Service Co. and subsidiaries for 1927 compares as follows:

	1927	1926
Gross earn.	$158,028,258	$140,309,834
Net aft. tax.	60,117,992	46,306,907
Interest	18,859,312	18,966,539
Net inc.	$41,258,680	$27,340,368
Pref. divs.	12,946,590	10,304,362
Surplus	$28,312,090	$17,036,006

Consolidated balance sheet of Cities Service Co. and subsidiaries as of December 31, 1927, compares as follows:

Assets	1927	1926
Plt. and inv.	$650,510,512	$558,503,416
Sink. fund	6,267,179	7,043,246
Sub. secur. dep.	14,204,973	.....
Cash	29,485,485	24,505,844
Secur.	1,027,329	436,577
Bills rec.	1,190,353	1,731,441
Accts. rec.	32,595,471	21,107,365
Oil in stock	26,940,088	12,961,472
Mat. and sup.	10,997,069	9,893,442
Adv. pay.	993,207	5,515,660
Notes and accts. rec. not curr.)	1,027,680	.....
Bd. disc., etc.	28,572,486	21,234,156
Def. chgs.	4,976,822	.....
Spl. dep.	247,108	195,875
Total	$809,036,357	$663,128,487
Liabilities		
Pfd. stk.	‡$103,495,124	$102,363,577
Pref. stks.†	10,041,985	.....
Pfd. B stk.	.....	4,137,924
Pfd. BB stk.	.....	5,630,534
Com. stk.	*85,004,585	*80,067,462
Subs. stk.	122,983,623	75,612,026
Fd. debt.	315,228,941	277,883,847
Bills pay.	29,068,937	11,452,216
Accts. pay.	12,921,604	6,466,064
Accrd. int. and tax.	8,305,603	7,407,264
Other cur. liab.	.....	9,768
Other liab.	3,229,212	3,802,790
Depr. and other res.	73,858,858	52,250,073
Surplus	44,897,885	35,444,943
Total	$809,036,357	$663,128,487

*Par $20. †Represented by 375,240 no-par shares 60-cent cumulative preference B stock and 62,895 no-par shares $6 cumulative preference BB stocks. ‡Represented by 1,034,951 no-par shares of $6 cumulative preferred stock.

Columbia Gas

By exercising its option to buy Cincinnati Gas & Electric Co., previously leased, and merging it with two of its other properties in Cincinnati district, Columbia Gas & Electric is effecting a further major step in integrating system operations. Properties now extend over wide areas in West Virginia, Pennsylvania, Ohio and Kentucky, with some smaller connected operations in Maryland, serving a population of about 5,000,000 with electricity and gas.

Integrating of properties started late in 1926 when the Columbia system was expanded physically and otherwise by acquisition of Ohio Fuel Supply Co. This brought to the system the 49 per cent of United Fuel Gas stock it previously did not hold as well as large operating properties in production, transport and distribution of natural gas in West Virginia, Pennsylvania and Ohio. A new Columbia Gas & Electric Co. was formed and, after exchange of securities, the old company and Ohio Fuel Supply were liquidated. Then followed division of the operating organization into five major departments. No less than a dozen underlying companies have been merged into the departments best suited to operate them. The new Cincinnati grouping will put three companies into one unit.

In connection with merging of subsidiary operating units, P. G. Gossler, president, says that in 1927 there were "withdrawn from the hands of the public entire outstanding amounts of nine issues of bonds and stocks of subsidiary companies. In addition, four issues of bonds of subsidiary companies and one issue of bonds of a leased company were called for redemption during the year. Total of securities so retired in these transactions and by sinking fund operations was $40,567,673 par value." To the extent that new securities were issued to effect this, they were made by parent company.

As now constituted, the system is divided into Charleston, W. Va., Cincinnati, Columbus, Dayton and Pittsburgh departments. These served directly or

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LIST OF ACTIVE PETROLEUM STOCKS

Stocks—	Par	Clos. Quot. Apr. 23	1928 Apr. 16	1928 High	1928 Low	1927 High	1927 Low	1926 High	1926 Low
Amerada Corp.	..	35⅝	36	36	27⅛	37⅛	27⅝	32⅜	24¾
Atlantic Refining, com.	100	126	125½	121¾	95¾	131⅜	107	128¾	97
Barnsdall "A"	25	24½	25½	26½	21¼	35½	20¾	32½	23½
California Petroleum, com.	25	31⅛	29	31	24	32⅞	20	38⅛	30⅜
Houston Oil	100	151	158⅝	166¾	127	175¾	60½	75	50¼
Independent Oil & Gas	..	28½	29¾	29¾	21⅜	32¾	17⅝	34	20¼
Louisiana Oil	10	15⅞	14¼	14¼	9⅜	18⅛	10½	19⅝	12
Maracaibo	..	18⅜	17½	18¼	12½	22¾	12	27¾	18⅜
Marland	..	42⅜	44	44	33	58¼	31	63⅜	41¼
Mid-Continent Petroleum	..	30⅜	31	31	25⅛	39⅜	25½	41	25⅜
National Supply	50	105½	95½	97⅞	90	95¾	76	84⅞	55½
Oil Well Supply	25	30	31	41	30	44⅝	31¼	36	30
Pan American, B	50	49¼	49⅝	49¾	37⅝	66⅜	45⅛	72⅜	56⅛
Pan American, Western B	..	24⅛	25	25	18¼	37⅞	16¾	46	34
Phillips Petroleum	..	43	42⅞	43½	35¼	60¼	36½	54⅞	42⅛
Producers & Refiners	50	23¼	23⅞	26	16	33⅞	16¾	26	11
Pure Oil, com.	..	24⅞	25⅝	27½	19	33½	25	31	25⅝
Royal Dutch, N. Y., sh.	13.40	47⅝	46⅜	48¾	44⅝	54½	44¼	57¾	49⅜
Shell Transport	10	44	42¾	42⅞	39⅜	49	41½	48⅞	42
Shell Union, com.	..	27⅝	28⅝	28½	23¼	31⅜	24⅝	30⅞	24
Simms Petroleum	10	23⅝	21⅛	25½	18⅛	23⅞	14¼	25⅝	16½
Sinclair Consolidated	..	27¼	28⅞	29⅝	17⅛	22⅜	15¼	24⅞	16¾
Skelly Oil	25	32	32¼	32⅝	25	37⅜	24¼	37¼	27
Standard of California	25	60	61⅛	61⅝	53	60⅜	50⅝	63½	54
Standard of New Jersey, com.	25	44⅛	44⅝	44⅝	37⅜	41⅝	35⅛	46⅝	37½
Standard of New York	25	34	32½	32⅝	28⅜	34⅛	29⅜	47¼	30⅝
Sun Oil Co.	..	42½	44⅜	44⅝	31½	34⅞	30	41¼	30⅛
The Texas Company	25	59½	59⅜	60	50	58	45	58	48
Texas Pacific Coal & Oil	10	14⅞	15½	17	12⅛	18⅞	12	19½	12⅛
Tide Water Associated	..	18⅜	20⅝	20⅝	14⅜	19⅛	15⅜	21	17
Transcontinental	..	8⅝	9⅛	10⅛	7⅛	10⅜	3⅜	5½	3
Union Oil of California	25	54	55⅜	57	42¾	56½	39⅜	53⅜	37¼
Union Tank, com.	100	120	120	125	119¼	126	94	120⅜	84¼
White Eagle Oil & Refining Co.	..	23¼	22⅜	24¼	20⅛	27½	21⅜	29¾	25½
Standard Oils									
Anglo-American	£1	19¼	19⅞	22⅜	18½	21⅝	17¼	19¾	16½
Borne Scrymser	25	53	52	56	50	69	49½	75	65
Buckeye Pipe Line	50	75	73½	70	58	59	45	69½	42
Chesebrough Manufacturing Co.	25	134	170	149¾	117¼	126	76⅛	81¼	63
Continental	10	18¾	19¾	23	16	22⅝	16¼	25⅞	10¼
Cumberland Pipe Line	100	102	97	105	89	‡137	90	137	102
Eureka Pipe Line	100	78	101	72⅝	64⅛	66	47	43¾	43
Galena Signal, com.	100	10	8⅜	7⅜	4	13½	4½	32¼	9⅜
Humble Oil & Refining Co.	25	69	68⅝	68⅝	59½	67¾	54	99⅝	52
Illinois Pipe Line	100	206	192½	206	176½	181½	123¾	144	131
Imperial Oil	..	62⅝	64	65¼	56⅞	64¾	37⅜	39⅜	32¼
Indiana Pipe Line	50	84½	82½	84¾	75	93	61	68	52¼
International Petroleum Co.	10	40⅛	41⅛	43	35	36⅜	28½	35¼	28¾
National Transit Co.	12.50	30	30	28¼	20½	23¼	13½	30⅝	27¼
New York Transit	100	56	54	54	38½	42	31¼	61½	27¼
Northern Pipe Line	100	120	117	117¾	94	96	70	80½	64
Ohio Oil Co.	25	64	62¼	66½	58½	66	52	67⅝	55⅝
Penn-Mex Fuel	25	78	75	44⅝	33	36⅛	12	24¼	15
Prairie Oil & Gas	25	52¼	51⅝	51½	47⅝	55½	45⅝	60¼	45
Prairie Pipe Line	100	216	217½	224	184	189¼	132	137½	122½
Solar Refining Co.	100	160	172	178	175	‡201½	178	212	184½
South Penn Oil	25	49½	52	42	36¾	41½	34½	50	30
Southwest Pa. Line	100	69	86	88¾	70	78	55½	56	47½
Southern Pipe Line	50	33	32½	33¼	21	39	18½	27	34
Standard of Indiana	25	78½	79⅞	80½	70⅝	80¼	64⅝	70½	60½
Standard of Kansas	25	24	25½	21¾	15	20⅞	15⅝	36½	26½
Standard of Kentucky	25	132	132	133	122½	125½	111½	134⅜	107
Standard of Nebraska	25	45	44	43	40½	49½	43	51¾	42
Standard of Ohio, com.	100	76	76	79¾	72	81½	72	362	192½
Swan & Finch, com.	25	20	18	17¾	16½	21	11½	21	18
Vacuum Oil	25	148½	152½	149	126⅜	147	95½	109⅜	94½
Miscellaneous									
Gulf Oil Corp. of La.	25	116	116¾	117¼	101⅛	116	86¼	95	82½

*Bid, no sales. ‡Old stock. †New stock. §Ex-dividend.

Quotations furnished by W. J. Wollman & Co.

The Oil and Gas Journal weekly average price of 20 representative petroleum stocks listed on the New York Exchange and New York Curb was as follows:

Apr. 23	68.76	Mar. 19	63.79	Feb. 13	61.02
Apr. 16	69.43	Mar. 12	62.07	Feb. 6	62.03
Apr. 9	67.21	Mar. 5	62.56	Jan. 30	62.75
Apr. 2	65.28	Feb. 27	62.54	Jan. 23	63.49
Mar. 26	64.48	Feb. 20	60.77	Jan. 16	63.87

COMMENT ON VOLATILITY TEST FOR MOTOR OIL

(Continued from Page 142)

cc. Engler flask, charged with 150 cc. of the oil to be tested, is placed in an insulating shield or box, approximately 5 inches square, inside, and 9 inches high, made of 1-inch transite. The vapor tube of the flask is connected to a condenser, such as the one used for the gasoline distillation test. The thermometer bulb is immersed to a depth of five-eighths-inch in the oil. Heat is furnished by an electric heater of at least 775 watts capacity. The distillation rate is carefully specified as in the gasoline test. The reading on the receiving cylinder is recorded at every 10 degrees rise in temperature. Heating is continued to the endpoint or to 760 degrees Fahrenheit if there is still oil in the flask when that temperature is reached. This test is intended to simulate the conditions which exist in the main and crank bearings, where the oil is heated.

The belief has been expressed that cracking of the motor oil takes place in the bearings of the crankshaft. To check the accuracy of this theory, steps were taken to ascertain the bearing temperatures. It was found, in the Cadillac car, that main bearing temperatures were about 450 degrees Fahrenheit and crank bearings were about 400 degrees Fahrenheit. These bearing temperatures, while closely approximating the flashpoint of the motor oils, are believed to be below the temperature of the oil film, which separates the bearings, keeping metal away from metal. Means have not yet been devised for finding the temperature of this oil film which is believed to be much higher due to the friction between the molecules in the oil film. This friction is believed to generate sufficient heat to vaporize the oil and to crack many oils. Such is the theory underlying the work of one motor car manufacturer on the question of volatility.

Several other reasons are advanced for the importance of volatility. Present day fast driving introduces the need for a high viscosity with a low degree of evaporation. With the long stretches of good roads and the more powerful engines that are being used in the new cars the need for such an oil is more pronounced than ever.

Many Criticisms of Test

Many criticisms were made by men whose opinions bear much weight in the oil industry. One from Dr. T. G. Delbridge and Dr. J. B. Hill of the Atlantic Refining Co. follows: "The value of a volatility test as a specification for motor oils seems questionable. The tendency in present automotive design to ventilate the crankcase is, of course, making this property more important. The use of volatility as a major specification, would militate strongly against the Gulf Coast oils and in favor of the Pennsylvania oils. It seems to us that the relative values of these different types of oils have not been sufficiently proven to warrent such a drastic step.

"Entirely aside from the question of general value of a volatility test as a specification for motor oils, the specific test described as adopted by the Cadillac company seems poorly chosen. As a test it is open to two major objections:

"1. The apparatus is complicated and would undoubtedly give a great deal of trouble in duplicating results. The principal trouble with all evaporation tests is the standardization of the air circulation, which is almost an impossibility.

"2. The evaporation rate of the oil during the first 24 hours is not, as the test assumes, indicative of the evaporation rate for the entire oil. As a matter of fact, a high evaporation as shown by the test may indicate simply a small quantity of light end and the oil may be otherwise superior in volatility characteristics to an oil showing a lower test. The test, therefore, constitutes only a crude and very indirect method of measurement of the vapor pressure of the oil as influenced by its light constituents and is in this respect little, if any, better than the flash test.

"If a volatility control is thought necessary it is our belief that it should be accomplished in the same way it is done with gasoline, this is, by a distillation test. This cannot be carried out at atmospheric pressure but is readily performed at decreased pressure. Such a test has been worked out and published by this company and is the logical volatility test if one is required."

The test referred to by Dr. Delbridge is described in "Industrial and Engineering Chemistry," Volume 17, No. 12, page 1,248, December, 1925, and the same issue, page 1,250. It is carried out at 10 mm. pressure.

Something Wrong With Engine

Others venture the opinion that if bearing temperatures run 400 degrees and 450 degrees something is wrong with the engine and that it is a mechanical problem rather than one of lubrication. In as much as the heat originates in the oil film itself, the temperature of the oil film will be found higher than the bearing temperatures. This being the case it would seem logical to take steps to cut down this temperature as even a heavy body oil will thin down to little or nothing more than the viscosity of kerosene. With cooler bearings the problem of volatility and evaporation rate would be relatively unimportant.

It is entirely possible that this question has been given more than its proper proportion of attention. Possibly it is a matter of importance to a small minority of car owners who drive cars at sustained high speeds. However, I feel that its importance will grow with the growth of good roads, more powerful engines and the characteristic American desire for speed and lots of it, and if its importance is growing, now is the logical time to study the question.

To continue with some of the objections which have been raised, we find one that occurs to all of us, coming from another oil man. It is this: We cannot measure the cracking tendency at 450 degrees Fahrenheit by measuring the volatility at 230 degrees Fahrenheit. And again, of what value is such a test, when after but a few miles of driving with new oil, it becomes diluted, losing its high volatility value, if it had one. In fact, predilution of the oil is suggested by this same company although in fairness it must be said that predilution of oil is recommended for winter use for the man who drives but little. However, there may be times when he drives at greater speed and for longer distances.

Opinions of automotive and oil company engineers who have studied the situation simmer down to this: High priced cars which are built for continued high speed call for oils of higher flash, fire and viscosity than formerly. This applies particularly to cars which are driven at speeds of over 45 miles an hour for long distances. Lower priced cars which are not capable of sustained speeds of over 45 miles an hour do not require any different lubrication than furnished for the past few years. However, it must be remembered that even these cheaper cars are crowding the higher priced cars in the matter of speed and with the gradual abolition of speed laws on the highways, the matter cannot properly be dismissed with a wave of the hand.

Basis of Oil Selection

The selection of the proper oil for these high-speed cars has been based on flash, fire and viscosity. The flash and fire has been used as the index of volatility of the oil and the viscosity as a measure of the ability of the oil to keep moving metal parts from each other. Too light an oil used in cars of the class of which we are speaking will vaporize and thin out under the high temperatures making it hard or impossible to maintain an adequate film of oil on the cylinder walls and resulting in an unusually large oil consumption per mile of driving. Robert K. Floyd of Detroit, an expert on lubrication of automobile engines is quoted as saying that tests show that miles per gallon of service given by an oil increases with the increase in viscosity to 70 seconds at 210 degrees Fahrenheit and that the efficiency is about level from that point to 85 seconds, when it begins to fall again. A high flash and fire test oil, which contains few of the lighter ends, will not evaporate as rapidly from the cylinder walls, resulting in better lubrication and long mileage.

Now that we have heard some of the criticisms of the volatility test, let us consider what the representatives of the General Motors Research Corp. have been quoted as saying. H. C. Mougey, chief chemist of this organization, makes the claim that road tests have shown that an oil with a low volatility value will give more miles of lubrication than a more volatile oil, when used under conditions where loss by evaporation is a factor, i.e. sustained high speeds. One road test which has been made public used two oils of 322 viscosity at 100 degrees Fahrenheit, one of low volatility and the other of medium volatility. This test was made in a low-priced six-cylinder automobile. At 30 miles per hour the oil consumption was about the same as 2,000 miles per gallon. At 50 miles per hour the miles per gallon had dropped to 460 for the nonvolatile oil and 320 for the oil of medium volatility. This is the condition which is claimed to hold true between oils of different volatilities, when used under high speed conditions. It makes the volatility test of real importance for cars which are driven at speeds of over 45 miles per hour for continued periods. In as much as nearly all drivers like to take advantage of long stretches of good roads by "stepping on it," it would seem as though the question is of importance to a great many automobile owners. Certainly its importance will continue to grow. There must be a pioneer for all new things and it will not be a bad idea to put some faith in this volatility test, at least until we can convince ourselves that there is something better.

FAIR GASOLINE DEMAND IN THE CHICAGO AREA

(Continued from Page 140)

still a demand for the low cold test oils, although it can be but a short time before they will cease to command a premium.

The demand for the medium and heavy oils is running along with little change, much of the buying being for immediate requirements and on the hand-to-mouth order. There has been some talk of weakening of the market for the heavy fuels but as a rule refiners are holding their prices very firmly. Occasionally a refiner will sell a single lot at something below the market price and occasionally rejected cars are offered at a concession but there is really little change in the market for even the heaviest grades. An offer was made of a considerable quantity of Smackover at 80 cents by a producer for resale but this was an exceptional offer and the market for that grade is close to 85 cents at the field.

There is no new development in the situation regarding West Texas fuels here. With many skimming plants now approaching completion in the West Texas Field there is no doubt that a considerable amount of fuel oil will be available to some one. In the East Coast refinery district where they are running more crude and securing less of the lighter products away down to gas oil, there must be a considerable increase in the amount of fuel oil run by the plants. In the long run this fuel oil will find a market somewhere, possibly displacing some of the Oklahoma product but so far there is no result noticable in this market. For one reason the production of Mexican fuel oil is much less. The coal situation is very easy, prices being low and supplies ample but the price of fuel oil is so moderate that it continues to displace coal in the industries as in the heating plants. Auto makers are busy with a record output and this is giving a large volume of business to many subsidiary plants who produce the material, equipment or supplies for the main plants. Locally building material is in demand but not as generally as a year ago. On the other hand, the steel plants are busy completing and shipping orders but are not booking much new business. There is talk of lower prices being made in the steel industry to bring in more new business. Car loadings have shown a considerable decrease during the last two weeks both as compared with preceding weeks and a year ago.

Lub Business Satisfactory

There is nothing new in lubricating oils and greases in this market. Refiners continue to report that they are shipping to tank car buyers on previous orders. This business is in a satisfactory condition as the shipments are being called for in good shape and frequently in advance of the dates for delivery on the original orders. Sales of blended motor oils are also good with refiners who have a trade for these products. Compounders are busy filling the orders of the dealers and consumers of quantities in the industrial oils. In fact, there is a steady movement from the refiner right through to the distributor. There is less complaint regarding the cutting of prices but much low-priced business is still being taken by some while others are trying to hold for their price. During last month and so far this month jobbers have been stocking up and several makers of the better grades of motor oils state that their business has shown a steady increase over last year at full prices. In some instances list prices have been slightly increased on the heavy oils. Such concerns look for a good season on the better grades of motor oils.

At several important points in the territory such as Duluth, Superior, Des Moines and Kansas City, for example, tank wagon prices have been restored to normal by both the major and the independent dealers. In fact, the territory as a whole is in excellent shape as the amount of price cutting is greatly reduced from what it was at the end of the motoring season last year. Greater co-operation is evidenced among all dealers to restore and maintain prices. This condition and the fact that it has been brought about largely through the co-operation of all dealers is a promise of a better gasoline season for many dealers than last year. In some places the distributor who sells at tank wagon prices to the motorist from his bulk plant on some siding is still active but this is really a minor evil at present.

Better Sales Methods Adopted

Many regular dealers are finding that they can combat this competition very nicely by better sales methods. There is always some danger to an industry when the established facilities are in excess of the needs to supply the customers.

A recent survey has been made in which it is stated that there are in round figures 125,000 drive-in service stations of which but 20,000 are operated and in most cases owned by the major companies while 105,000 drive-in stations are owned by individuals or by independent companies. The survey also states that including garages and curb pumps there are 370,000 outlets for the supplying of gasoline to the public which the survey claims is at least three times as many as are needed to satisfactorily meet the needs of the motoring public. This survey only visualizes as it were a fact that has been well known for years. Too many dealers always means very active competition and small profits. The latter element in the long run should act as a regulator and finally adjust the sources of supply to the actual demand.

In the meantime the individual or company which has made an investment in one or more stations knows that it must sell before it can make a profit. There can be no profit from the station that does not do any business. The constant effort of many station owners is to so adjust their expenses that they can sell gasoline at a profit. Many fail to do this and while they do sell they make no profit. If a community consumes 1,000,000 gallons of gasoline a year and could secure this entire supply through a single dealer who could deliver it from one station through one pump the expense

that that community would have to bear for its gasoline supply would be at a minimum. If two pumps in one station were required there would be a little more investment, a little larger overhead, a little increase in the burden on the public.

If there should come into that community a second dealer with a two-pump station obviously the burden on the public would be doubled with no real advantage to the public except that it might not be kept waiting quite as long during the rush hours on the days of best demand. If there were no additions to the present number of stations there might come a time when the increase in the number of cars and the annual consumption of gasoline would make it possible for all the stations to do a profitable business at a lower margin of profit than at present. But as there are three times the facilities required at present that time is a long way off. To make the stations already built pay is a better goal right now than to build more stations.

PIPE STILLS WITH PENNSYLVANIA CRUDE

(Continued from Page 86)

ning Pennsylvania crude to long residuum, the wax stays down in the long residuum. When running to cylinder stock base for bright stock the wax comes off in two cuts, one of which is a pressable wax distillate, and the other, which must be cracked to press successfully through a filter press.

Due to the fact that it is impossible to forestall the operations that might be found desirable in a unit for an existing refinery, the unit should be flexible. Each refinery having established grades will have to do considerable research work to apply the products coming from these units to these present grades.

Advantages of Pipe Still

Some of the known advantages of pipe still distillation units are as follows:

Finished cuts can be made having narrow initial boiling and endpoint temperature range and completely stripped of the higher boiling and lower boiling components, permitting maximum recovery of any cut.

Fuel is burned under conditions of maximum efficiency.

Oil is heated without burning.

Large capacity in small space.

Counter flow operation gives maximum heat recovery.

Minimum quantity of water for required cooling.

The filter house will be benefited because no color will be put in by the fractionating process. The operation of a pipe still merely required diligence and a reasonable amount of interest in the work to produce results. All the variables may be controlled automatically when desired to secure uniform cuts. For instance, steam regulators may be used to produce constant speed on the feed pumps; damper regulators may be used to maintain constant air pressure on the fire box regardless of the winds. The quantity of the gasoline stream may be automatically controlled; the furnace temperature can be controlled in many ways, and the temperature of the oil going to the fractionating tower may be controlled Given constant steam pressure on the plant and clear fuel oil, it is very easy to maintain constant conditions.

SEMIANNUAL MEETING OF REFINERS IS HELD

(Continued from Page 34)

Greene, Oil City and Franklin by J. W. Fawcett, and West Virginia by J. B. Northrup.

Among the entertaining features provided was a showing of moving pictures taken of the Atlantic City meeting last fall, F. G. Clark being responsible for these excellent films. "The Story of Petroleum" was shown by the Bureau of Mines.

O. P. Keeney presided at the discussion on membership and relations and the needs for additional members to obtain the largest results from the association's efforts was stressed, not only for the benefit of all those who co-operate in the work but for the promotion of good relations with the public which was the special plea of Trell Yocum, of the American Petroleum Institute.

H. A. Logan stressed the advantage that had been gained by weekly reports on stocks on hand which had been so successfully accomplished by withholding from all published reports the names of companies reporting.

Statistical Situation

G. C. Davison, of the Tri-State Refining Co., submitted a paper which treated of the problem whether the refining branch of the industry was helping the present situation of overproduction. The law of diminishing returns had operated; that is, after the industry had shown a great margin of profits, enlargement of operations tended to diminish profits. That law, he said, had been working seven or eight years, and the returns had been diminishing. The refining industry, he said, could adapt itself to the changed situation and get fair profits even if the enormous margin of seven or eight years ago had forever departed.

A flood of oil, he said, means low-priced gasoline as a result of the law of supply and demand. Other industries had had the same difficulty to contend with, and it is now time for the oil industry to study the remedies they had applied and adopt them if applicable to petroleum. The other industries are not meeting legal objections to the remedies they are applying.

Markets

The functioning of marketing groups was discussed by H. A. Logan, of the United Refining Co., and he showed that these groups are holding meetings to discuss marketing conditions. T. J. Hilliard presided over the discussion on the subject of accounting, and J. E. Johnson, of the Waverly Oil Works Co., spoke on manufacturing expenses. Up to the present time, he said, there has not been developed a satisfactory and simplified method of cost accounting for the Pennsylvania refinery. This is due largely to the fact that many products are derived from the basic raw material which in the course of processing enters into several semifinished stages and is run and rerun, filtered and refiltered, each time changing its identity to a certain extent.

Some remarks were made on the subject of traffic and transportation by Willis Crain, traffic attorney of the association.

Herbert G. Eaton and E. W. Smiley acted as recording secretaries of the association.

WATER CONDITIONS IN HENDRICKS POOL

(Continued from Page 35)

The water is believed essential to obtain the maximum ultimate recovery. To bear out the theory its supporters point out numerous examples in West Texas where leases that do not show water have had a low recovery to date in comparison to those leases that do make water. Mitchell County production is pointed out as an example.

Engineers, however, fear that the unrestrained producing of wells will suck in the water rapidly and cause a coning condition that will seal off a vast amount of production in the pay zones. Most of the big wells in the field are being produced under back pressure to try and allow the water table to rise more uniformly. Proration is expected to bring about the producing of most of the wells under back pressure and thereby increase the ultimate production of the field.

As is shown by the table, the total recovery up to April 1, by leases, in Hendricks is close to 15,000,000 bbls.

One of the remarkable leases is owned by the Southern Crude Oil Purchasing Co. That lease is T-8S-B, the northwest 160 acres of Section 4, Block B-5. The lease is in the area where water first showed, yet one well on that lease has produced 1,000,000 bbls. to date and is producing within 300 or 400 bbls. of its initial production. The north offset to the well, however, is a poor producer and showing 60 per cent water.

This one well is mainly responsible for the Southern Crude company leading other producers in recovery to date. Roxana Petroleum Corp follows with a total recovery of close to 2,000,000 bbls. from its leases.

WATER REPORT HENDRICKS FIELD, APRIL 14, 1928

Company, lease—	Well	Water first appeared	This week water-b.s.	Temp.	Total depth
Atlantic Oil Producing Co.:					
Hendricks-D	1	12-23-27	14%	65	3,015
Hendricks-D	2	1- 3-28	10%	65	2,983
Hendr'cks-E	1	2-14-28	8%	65	2,798
Hendricks-A	5	4- 7-28	6%	70	3,043
Cranfill & Reynolds:					
Hendricks-A	1	2-12-28	60%	70	2,887
Gulf Production Co.:					
Hendricks	1	12-20-27	..	65	3,014
Hendricks	3	1-27-28	12%	65	2,842
Hendricks	4	1-11-28	20%	65	2,883
Hendricks	5	2-29-28	12%	65	2,880
Hendricks	6	2-11-28	20%	65	2,895
Hendricks	7	4- 6-28	2%	65	2,897
Hendricks	9	3- 9-28	70%	..	2,957
Hendricks	10	3-24-28	8%	65	2,696
Humble Oil & Refining Co.:					
Hendricks	1	2-10-28	70%	70	2,729
Hendricks	4	3-24-28	40%	65	2,890
Hendricks	5	3-22-28	5%	65	2,979
Hendricks	6	3- 9-28	50%	65	2,811
Hendricks	7	3-30-28	20%	65	2,924
Hendr'cks	8	3-30-28	90%	65	2,915
Hendricks	10	3-30-28	20%	65	2,861
Hendricks-B	1	12-16-28	51%	65	2,968
Hendricks-B	2	2-24-28	45%	65	3,010
Hendricks-B	3	3- 8-28	O.K.	65	3,026
Hendricks-B	5	3-30-28	O.K.	70	2,924
Independent Oil & Gas:					
Hendricks	1	June, 1927	10%	60	3,095
Hendricks-A	1	12-14-27	45%	65	2,879
Hendricks-A	2	12-14-27	5/10	70	2,815
Hendricks-A	8	2-22-28	15%	60	2,963
Howe	1	3-15-28	5/10	65	3,043
Vaderman	1	12-14-27	60%	65	2,743
Vaderman	2	2-22-28	30%	65	2,794
Vaderman	4	4- 6-28	10%	65	2,862
Landreth:					
Grisham-Hunter	1	3-10-28	O.K.	60	3,013
Grisham-Hunter	2	3-10-28	O.K.	60	3,005
Hendricks-A	1	3- 2-28	64%	65	3,043
Hendricks-A	2	4- 5-28	72%	65	3,085
Hendricks-A	3	3-10-28	35%	65	3,084
Hendricks-A	4	3- 9-28	31%	65	2,988
Magnolia Petroleum Co.:					
Hendricks	1	1-24-28	18% & 2%	70	2,935
Hendricks	2	12-16-28	84%	65	2,924
Hendricks	3	3- 2-28	O.K.	65	2,900
Hendr'cks	4	1-23-28	99.2	70	2,888
Hendricks	5	1-11-28	99.2	75	Drlg.
Hendricks	6	2-24-28	19%	65	Drlg.
Hendricks	7	3-22-28	99%	..	3,005
Murchison Oil Co.:					
Hendrick-B	3	2-16-28	13%	65	3,050
Pure Oil Co.:					
Hendricks-A	1	12-17-27	90%	..	2,837
Hendricks-A	2	1-31-28	30%	..	2,940
Hendricks-A	3	1-25-28	50%	..	2,759
Hendricks-A	4	4- 3-28	40%	..	2,792
Hendricks-A	5	4- 4-28	4%	..	2,766
Hendricks-B	4	3-20-28	1% & 4%	..	2,928
Hendricks-B	6	4- 9-28	..	..	2,865
Roxana Petroleum Corp.:					
Hendricks-B	1	3-10-28	34%	..	3,072
Hendricks-B	2	3- 8-28	7%	..	3,053
Hendricks-C	1	1-14-28	44%	..	2,885
Hendricks-C	2	1-14-28	44%	..	2,942
Hendricks-C	4	3-16-28	..	..	2,970
Hendricks-C	5	1-14-28	52%	..	2,935
Hendr'cks-D	1	1- 3-28	89%	..	2,791
Hendricks-D	2	3- 9-28	56%	65	2,763
Southern Crude:					
Hend. T-67-1-B	2	4- 7-28	3%	65	3,085
Hend. T-67-1-A	1	1-14-28	15%	65	3,049
Hend. T-67-1-C	12	1-14-28	19%	65	2,988
Hend. T-67-1-C	13	1-14-28	11%	65	3,053
Hend. T-67-1-C	4	1-14-28	8%	65	3,028
Hend. T-67-1-C	3	1-14-28	16%	65	3,030
Hend. T-67-1-C	5	3- 9-28	16%	65	2,925
Hend. T-67-1-F	1	1-14-28	8%	65	3,023
Hend. T-67-1-F	3	3- 9-28	56%	65	3,035
Hend. T-67-1-F	4	3- 9-28	20%	65	3,008
Hend. T-8S-A	1	2-16-28	5%	65	3,077
Hend. T-8S-A	2	4- 6-28	2%	65	3,100
Hend. T-8S-B	2	3- 8-28	60%	65	3,040
Hend. T-8S-H	1	3- 5-28	6%	65	3,023
Hend. T-8S-I	1	3- 9-28	15%	65	3,040
Texon:					
Hendricks-A	1	2- 1-28	78%	65	2,942
Hendricks-A	2	4- 1-28	50%	65	2,750
Hendricks-B	1	3-20-28	17%	65	2,987
Turman:					
Hendricks	1	3- 1-28	25%	65	3,045
Maxwell:					
Hendricks	2	3- 1-28	40%	65	2,988
Hendricks	3	1-25-28	20%	65	2,980
Hendricks	4	4- 6-28	1.5%	65	3,057

Company, lease—	Well	Water first appeared	This week water-b.s.	Temp.	Total depth
Hendricks	7	2-16-28	45%	65	2,860
Turman:					
Hendricks	8	4- 5-28	5%	65	2,967
Republic:					
Hendricks	1	4-11-28	5%	65	....
Hendricks	4	4-11-28	7%	..	2,752
Southern Crude:					
Hend. T-67-1-B	1	4-11-28	3%	..	....

PRODUCTION HENDRICKS FIELD

From Discovery, February, 1926, to April 1, 1928, by Company and Leases

Company, Lease—	Wells	Total Production	Acreage
Atlantic Oil Producing Co.:			
Hendrick-A	5	490,000	80
Hendrick-B	1	29 310	80
Hendrick-D	3	304 998	80
Hendrick-E	1	299.107	80
Hendrick-F	1	200.000	160
		1,323,415	
Cranf'll & Reynolds:			
Hendrick-A	2	901.900	20
Hendrick-B	1	16.000	10
Hendrick-C	1	350,000	20
		1,267,900	
Gulf Production Co.:			
Hendrick-A	7	1,315.000	160
Hendrick-B	1	94.980	160
Hendrick-C	1	2.700	160
		1,412,680	
Humble Oil & Refining Co.:			
Hendricks-A	6	887.000	160
Hendricks-B	4	595.250	80
Hendricks-C	1	95.700	640
		1,487,950	
Independent Oil & Gas:			
I. Hendrick	1	79.500	120
Vardeman	2	301.700	80
Howe-B	1	43.000	80
Howe-A	6	571.900	80
McCabe	1	300	640
		996,400	
Landreth & Roxana:			
Grisham-Hunter	3	753.800	80
Grisham-Hunter-A	3	499.000	160
		1,252,800	
Maxwell & Turman:			
I. Hendrick	6	327.000	80
		327,000	
Magnolia Petroleum Co.:			
Hendrick	4	408.000	80
		408,000	
Murchison Oil Co.:			
Hendrick-A	2	64.000	40
Hendrick-B	2	82.900	10
Hendrick-C	1	56.000	40
		202.900	
Pure Oil Co.:			
Hendrick-A	3	389.000	160
Hendrick-B	2	74.910	160
		463.910	
Republic Production Co.:			
Hendrick-A	2	714.000	80
Hendrick-B	1	1.400	80
		715,400	
Roxana Petroleum Corp.:			
Hendrick-A	2	591.000	80
Hendrick-B	3	266.510	80
Hendrick-C	6	870.690	80
Hendrick-D	4	323.090	80
		1,961,200	
Southern Crude:			
Hendrick 67-1-A	1	120.000	50
Hendrick 67-3-A	1	83.000	80
Hendrick 67-1-B	1	48.650	80
Hendrick 67-1-C	4	410.000	80
Hendrick 67-1-F	3	259.700	80
Hendrick 68-3-A	1	145	80
Hendrick 88-1-A	1	219.560	80
Hendrick 88-1-B	2	1,062.000	80
Hendrick 88-C	5	215 875	140
Hendrick 88-H	1	50,000	110
Hendrick 88-I	1	51,000	80
Hendrick 89-1-A	1	1.900	210
		2,521.830	
Texon Oil & Land:			
Hendrick-A	2	213 900	80
Hendrick-B	2	222.150	80
		436,050	
Totals as of April 1, 1928	116	14,777,435	5,490

WEST TEXAS FIELDS

(Continued from Page 43)

Company, Lease—	Wells	Bbls.
Ma.land Oil Co.:		
Yates-A	10	907
Mazda and Savoy Oil Co.:		
M. A. Smith	1	300
McMan and Marland:		
Yates	15	4,313
McMan O. & G. Co.:		
J. H. Tippett	2	458
Mid-Kansas and Transcontinental:		
Yates-A	15	4,166
Yates-B	24	6,396
Yates-C	9	2,148
Yates-D	2	817
Yates-E	1	107
Yates-F	1	206
Yates-G	1	44
Smith	2	65
Smith-Taylor	14	3,9s8
Phillips Pet. Co.:		
Smith	1	80
Red Bank Oil Co.:		
Smith	2	490
Roxana Pet. Corp.:		
Tippett	7	3,574
Smith	6	1,1y6
Skelly Oil Co.:		
Tippett	1	135
Simms Oil Co.:		
Smith	6	3,078
Texon O. & L. Co.:		
Yates	2	0
Total Yates Field	175	50.521
Average per well		282.9
Winkler County		
Atlantic O. P. Co.:		
Grisham-Hunter	6	6.609
Grisham-Hunter-E	1	1.272
Ida Hendricks	1	324
Ida Hendricks-D	3	*4,702
Atlantic and Collett:		
Ida Hendricks-F	2	5,884
California Co.:		
Ida Hendricks	7	5,143
Cranfill & Reynolds:		
Ida Hendricks	2	2.048
Grisham-Hunter-B	1	154
Hendricks-C	1	*20,615
Gulf Prod. Co.:		
T. G. Hendricks	9	16,087
Humble O. & R. Co.:		
Grisham-Hunter	7	19.235
Ida Hendricks-B	5	4.935
T. G. Hendricks-C	1	9,561
Independent O. & G. Co.:		
E. W. Cowden	1	95
Grisham-Hunter	7	*6,689
Grisham-Hunter-B	3	*4,644
Hendricks	1	23
Ida Hendricks-B	1	297
Landreth Prod. Corp.:		
Grisham-Hunter	2	5.910
Ida Hendricks-A	4	4,978
Magnolia Pet. Co.:		
Ida Hendricks	6	3,467
Murchison & Cranfill Bro.:		
Grisham-Hunter	2	126
Grisham-Hunter-C	1	85
Grisham-Hunter-B	2	595
Pure Oil Co.:		
Grisham-Hunter	5	5.651
Grisham-Hunter-B	3	2,820
Republic Prod. Co.:		
Grisham-Hunter-A	2	*4,682
Grisham-Hunter-B	1	25
Roxana and Llano:		
Scarborough	2	50
Roxana Pet. Corp.:		
Grisham-Hunter-A	2	*15,470
Grisham-Hunter-D	4	*4,912
Ida Hendricks-B	3	*4,154
Ida Hendricks-C	7	*14,931
Southern Crude Co.:		
T-67 Hendricks-A	1	198
T-67 Hendricks-C	5	1,093
T-67 Hendricks-B	2	759
T-67 Hendricks-3-B	2	*12,800
T-67 Hendricks-F	3	2,413
T-68 Ida Hendricks-A	1	0
T-88 Ida Hendricks-A	2	1,881
T-88 Hendricks-B	2	5.665
T-88 Ida Hendricks-C	6	2,193
T-88 Ida Hendricks-H	2	2,880
T-88 Ida Hendricks-I	1	767
Texon O. & L. Co.:		
Grisham-Hunter-A	2	*5,192
Grisham-Hunter-B	2	5,337
Total Winkler County	136	217.351
Average per well		1,599.8

*Pinched in. **Shut in.

WEST TEXAS COMPLETIONS
Week Ending April 21

Concho County

C. R. Dutton & Hughes Drilling Co.'s No. 1 W. O. Shultz, Section 127, Block 72, T.&N.O.R.R. Survey, was dry and abandoned at 1,505 feet.

Howard County

Magnolia Petroleum Co.'s No. 10 Mary Chalk, was shot with 40 quarts at 1,674-94 feet and swabbed 10 bbls.

Pecos County

Kirby Petroleum Co.'s No. 1 University, NE cor. Section 36, Block 24, University Land, had 200 feet of sulphur water at 1,310-50 feet and was abandoned at 1,356 feet. Rowan & Tong's No. 1 Scharff & Blackman, Section 4, Block 9, made 5,000 bbls. of sulphur water at 2,213-15 feet and was abandoned. Mid-Kansas and Transcontinental Oil Co's No. 1 Yates-G, Section 34½, Block 194, topped the pay at 1,192 feet and bottomed at 1,378 feet and made 2,155 bbls. in five hours through a 4-inch line.

Reeves County

Vacuum Oil Co.'s No. 1 Grisham-Hunter was dry and abandoned at 3,550 feet.

Winkler County

Atlantic Oil Producing Co.'s No. 6 Grisham-Hunter, NW cor. SE SW Section 34, Block B-5, topped the pay at 2,885 feet and bottomed at 3,025 feet and produced 130 bbls. per hour from pay at 2.890-2,900 feet. Humble Oil & Refining Co.'s No. 1 T. G. Hendricks-C, SE cor. Section 32, Block 26, found the pay at 2,806-34 feet and made 12,000 bbls. open. Pure Oil Co's No. 4 Grisham-Hunter-C NE cor. SE Section 45, Block 26, found the pay at 2,761-66 feet. The well was shut in making 400 bbls. of oil per hour, 40 per cent water. Roxana Petroleum Corp.'s No. 7 Ida Hendricks-C, SE SW N half NW Section 29, Block B-5, topped the pay at 2,904 feet and bottomed at 3,022 feet and made 957 bbls. on open flow, 1 per cent water.

Runnels County

Gibson & Johnson have abandoned the location for their No. 1 Harris estate in the Juliana Voske Cabrera Survey.

Late Fields

(Continued from Page 42)

shut down last night on account of boiler trouble. It will resume drilling this afternoon. The well is at a total depth of 2,887 feet in a very hard formation. It is carrying 1,800 feet of water and some sulphur gas from 2,860 feet. Four miles south of it in Winkler County, Texas, is the important Gibson & Johnson test on school land in Section 30, Block 74, which had 1,000,000 feet of gas at 2 975 feet which was being mudded off with the hole at a total depth of 2,987 feet.

GULF COAST

HOUSTON, Tex., Apr. 24.—Gulf Refining Co. of Louisiana got its second producer at Sorrento Dome, Ascension Parish, Louisiana, when it brought in its No. 6 United Land Co. flowing 1,000 bbls. of pipe line oil daily. The well is 250 feet west and a little south of the discovery well. No. 4, which came in making 4,000 bbls. No. 6 ran considerably higher than No. 4, being at a total depth of about 1,645 feet.

Moody Corp. Monday completed its No. 1 Calvert, at Pierce Junction, Harris County, south of Houston, flowing 2,500 bbls. of pipe line oil daily from sand at 4,748 feet.

MERGER OF MARKETERS DENIED BY A.O.M.A.

CHICAGO, Apr. 23.—At the regular meeting of the directors of the American Oil Men's Association, it was unanimously voted that the organization approved heartily the editorials and the plan outlined by The Oil and Gas Journal for increasing the sale of gasoline through encouraging the greater use of motor cars for touring and other purposes.

The directors found the financial condition of the organization very satisfactory. The increase in memberships was beyond their expectations. Action on the date of the fall meeting was deferred until the next meeting of the board. Hereafter the board will hold regular monthly meetings on the second Thursday of each month. The attendance at the meeting was unusually large and much interest was shown in the organization. During the discussion of matters of general interest to the membership it was stated it had been reported there was a movement on foot to merge the two organizations of oil men with headquarters in this city. The suggestion was characterized as not only impossible but foolish and was passed over as merely a matter of gossip, no proposition having been made to the management of the organization which had certainly made no overtures on its part.

NEW TEXAS MAPS

Five new county maps have been added to the list of Texas county maps made by the Logan Map Co., Fort Worth. The new maps are of Callahan, Runnels, Culbertson, Dawson and Yoakum Counties. Each map is made up on the scale of 1 inch to 4,000 feet and shows the fee and lease ownership and production data.

EXPERIMENTS MADE ON CRUDE OIL RECOVERY

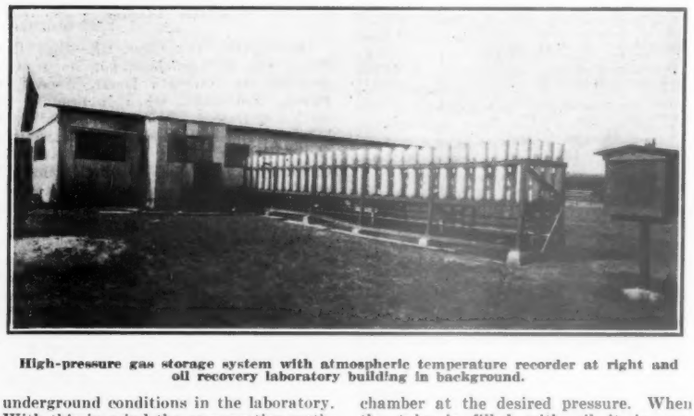
(Continued from Page 38)

has gone to great effort and expense to eliminate this danger so far as it is possible.

The oil recovery laboratory is equipped with a unique high pressure gas storage system situated outside of the laboratory as shown in one of the accompanying photographs. This gas storage system capable of holding 2,000 pounds pressure consists of 100 high pressure helium gas cylinders loaned to the Bureau of Mines by the government helium plant at Fort Worth, Tex. These high pressure gas cylinders are all connected to a high pressure header system through which they are charged and through which gas is delivered to the laboratory when needed.

Auxiliary experiments including the proper testing and adjustment of all measuring instruments both before and after experimental runs and the proper regulation of pressure and volume flows during the experimental runs constitute an important part of all of this work. A large number of minor problems too numerous to mention at this time have been solved in order to insure the success of the work.

At the outset of these experimental investigations it was recognized that it would be impossible to exactly duplicate underground conditions in the laboratory. With this in mind the comparative method of study was adopted. The effort was made to eliminate all or as many of the variables as possible except those being studied. The experiments were planned in groups or series of two or more tests for the purposes of comparison. To facilitate this type of comparative experimentation, the flow tube equipment was designed in pairs there being two flow tubes of each size of identical dimensions and capacity, so that two flow tube runs could be made at the same time for comparative purposes.



High-pressure gas storage system with atmospheric temperature recorder at right and oil recovery laboratory building in background.

Laboratory Equipment

In order to conduct the necessary experimental work, part of a large outbuilding was converted into a thoroughly equipped laboratory; the walls of this building were insulated with Celotex and a concrete floor was covered with wood.

At the present time the major equipment in the laboratory consists of one large constant temperature bath (24 feet by 4 feet by 4 feet), one large hot water storage tank, 5 feet high, 3 feet in diameter; one high pressure oil circulating pump; one 25-bbl. oil storage tank outside the laboratory; one solubility chamber 18 feet long made of 10-inch pipe; one high pressure gas storage system outside of laboratory; one high pressure air and gas compressor, test gas meters reading to 1/1,000 of a cubic foot; two 6-inch flow tubes 6 feet long with flanged ends; miniature wells and other attachments as shown in the photographs; one traveling chain hoist system and a great array of miscellaneous small equipment including pipe, carpenter and machinist tools, indicating and recording thermometers and pressure gauges, dead weight testers, meter provers, balances, gravity bombs, and factor bombs. Outside of the laboratory there is a sand house equipped with dryer, one electric sand screening machine and many other smaller items of equipment.

The material being used in the present experiments are Wilcox sand from the outcrop of this formation near Roff, Okla.; Bartlesville crude oil A.P.I. gravity 33 degrees and natural gas from the Bartlesville city gas system.

The 6-inch flow tubes equipped with miniature oil wells and flanged ends as shown in the photograph are being used in the present oil recovery study. To prepare for an experiment, flow tubes of equal size and volume are stood vertically and the upper flanges removed. They are then tamped very tightly with dry Wilcox sand. Tamping is accomplished by hammering against the walls of the tube and tamping vertically as sand is introduced. The Wilcox sand is tamped to an approximate porosity of 31 per cent and when hammering on the sides of the tubes produces no further settling of sand, the upper gaskets and the heads are replaced.

The tubes are then purged with natural gas by three times charging them with the gas at approximately 100 pounds pressure and then blowing the gas off in order to remove all air from the sand. Gas is then charged into the flow tubes at a predetermined pressure approximating the pressure which is to be used in the contemplated experiment.

The gas in the flow tube is then displaced from the tube by oil with its dissolved gas drawn from the solubility chamber at the desired pressure. When the tube is filled with oil it is connected up as part of live oil circulating system in which oil with its dissolved gas is circulated through the solubility chamber and through the flow tubes by means of the high pressure pump. After this circulation of live oil (oil charged with dissolved gas) has continued for approximately one hour the flow tubes are placed in the constant temperature water bath by means of the traveling chain hoist. Circulation of live oil through the flow tubes which are now kept at a constant temperature of 70 degrees Fahrenheit continues until the gas factor becomes constant throughout the entire system. The equipment is now ready for the beginning of the contemplated series of experiments.

Aims of Experiment

The basic problem in these investigations is to determine how much oil can be recovered from sands by the expulsive force of gas dissolved in the oil at various initial pressures. After this has been determined, the tubes are repressured by air or gas to determine how much oil can be recovered from the depleted sands through various methods of repressuring.

The bureau is amassing a vast store of data relative to these important problems. The engineers are also correlating laboratory data with the results of actual field operations. In this collection of field data on oil recovery, it is gratifying to note that all producing companies are giving the engineers access to their most detailed and confidential production records, involving all producing sands in various stages of production and depletion.

Many operators engaged in repressuring work have noted that compressed air introduced into oil sands is changed to a mixture of carbon dioxide and nitrogen. Under these conditions casinghead gas recovered from producing wells soon becomes inert and useless for power or fuel purposes. It has also been noted that the character of the oil is badly affected by repressuring operations in many cases where air is used as the repressuring medium. Emulsion troubles are increased in some fields and many operators claim that the oil becomes oxidized by compressed air which is put into their pressure or key wells.

The Oil Recovery Section of the United State Bureau of Mines at Bartlesville is investigating the bad oil and bad gas problems with a view toward assisting the operators to overcome these difficulties.

The bureau cordially welcomes visitors and gladly gives any assistance possible to those experiencing difficulties along the lines that are being investigated. They have already assisted a large number of operators in overcoming their difficulties. It must not, however, be assumed that the Bureau of Mines is in any way entering into competition with consulting petroleum engineers. The bureau's activities lie along certain specified lines of investigation. These petroleum investigations are conducted for the good of the entire petroleum industry; all who are interested are entitled to share in the results.

NATURAL GASOLINES ADVANCE RAPIDLY

(Continued from Page 32)

gasoline prices showed a consistent advance week after week had to be answered quickly. But in the acceptance of this business, Oklahoma and North Texas are in a much stronger position to deal with any resistance that may come up on the local spot market over the balance of the month. In this respect, the acceptance of these orders is viewed as a factor tending to strengthen the market rather than an indication that refiners are ready to unload with future prices uncertain

Just what change gasoline prices will make over the next two months remains questionable. We still face overproduction of crude oil with much of it shut in, so the possibility of a general crude advance in the immediate future is not expected on the part of refiners and they do not expect support for higher gasoline prices to come from that factor. Likewise, higher retail prices are anticipated by many and this would support higher refinery prices. But this is pointed to as the reverse of what should be effected. In other words, refiners say refinery gasoline prices should go materially higher, at least to 7½ cents, before a general 1-cent advance in the tank wagon and station prices could be maintained without repeating last year's price-cutting practices.

A narrow margin between the refinery price and the station price will eliminate price wars and will retard the over expansion of the marketing end of the industry. Refining has become such a complicated process, involving a relatively large investment, there is little likelihood of new refining units being built to increase production even though refinery gasoline prices should continue to advance.

The new plants that are being built are practically all located in the West Texas and Panhandle Fields. The gasoline market is not expected to weaken as a result of the starting up of these plants because they are all small and the crude to be run yields much less gasoline than the Seminole crude which flooded the market last year. Furthermore, these plants are not installing cracking units and the yield per barrel of crude run in the West Texas Field will be only 50 per cent of the average Mid-Continent refinery.

This will tend to weaken the fuel oil market, however, and the fuel oil price will probably be the limiting factor in extending West Texas refinery operations. Thus, it seems that relatively low fuel oil prices will exist over the next few months at least, and there is a good chance for gasoline prices to continue to advance in face of these several factors which on the surface tend to retard any advance.

Gasoline and Naphtha

Rain throughout a greater portion of the Mid-Continent marketing territory slowed up orders and consumption somewhat, and a great portion of the material moved from the refineries was for export. There was no evidence of prices weakening as a result, but, on the contrary, refiners feel they are now in a position to advance their price on U. S. Motor gasoline to 7 cents with the resumption of buying to supply the great increase in consumption which is sure to come very shortly. The average weighted prices on the more important grades of gasoline sold by Mid-Continent refiners Monday, April 23, and those of a week previous are shown below:

Grade—	Price Apr. 23	Price Apr. 16
58-60 437 endpoint..	.06851	.06838
60-62 437 endpoint..	.06798	.06896
60-62 400 endpoint..	.07096	.07125
64-66 375 endpoint..	.07250	.07062

Naphtha sales increased slightly as a result of the better demand from blenders. The higher endpoint gasolines and naphtha blends are being given more attention as the price of the U. S. Motor grade advances.

Kerosene

There is a diversity of opinion regarding the stability of the kerosene market. There was no change in price, but there was a falling off in the demand from the agricultural states. An export inquiry tended to support the thought that kerosene prices will gain strength over this week, but on the other hand, production is high and 5 cents was looked upon as the top price to be expected for the immediate future.

Natural Gasoline

With the demand for natural gasoline unusually good on the part of refiners, together with the possibility of large quantities of it being moved to the Gulf to supply new orders, manufacturers are holding their prices high and several are not competing on the spot market. Over the last two weeks, natural gasoline prices in general have increased more than 40 per cent. This places natural gasoline prices on a basis more comparable with refinery gasoline. Unless some large export orders come in over the balance of the month, however, it is not likely prices will show much change, now that they are so near the refinery gasoline prices.

The lesser production of natural gasoline in the Seminole, pointed out several weeks ago, and the strengthening of the refinery market have undoubtedly contributed materially to the better natural gasoline price structure.

Gas Oil and Fuel Oil

Both gas oil and fuel oil showed weakness over the week and while there was no free offering of the material at the lower prices, there was plenty available to meet the spot demand and no material improvement is expected over the balance of the month. The heavier grades of fuel were available at prices as low as 75 cents and in fairly large quantities. With gas oil at 2½ cents and gasoline at 6¾ cents there is a differential in price of 4¼ cents. This differential more than pays for the cost of cracking, and cracking in general is profitable now.

However, the differential has not been increased sufficiently for the refiners to pay the 1 or 1½-cent additional freight as the delivery cost to their plants, and this factor, together with their increasing crude runs and gas oil production, without making a corresponding increase in the capacity of their cracking facilities, has held spot gas oil prices down.

Lubricants and Wax

There is little change in the lubricant market and this is also true of the wax. Shipments of motor oils have increased slowly as the summer season is approached, and there has been less evidence of price concessions for the larger orders, but as yet there has been no general advance in prices.

Refiners are finding an increasing resistance on the part of wax buyers as prices are advanced above 3 cents, but the 3¼-cent price being generally quoted shows no tendency to weaken.

HENDRICKS TO BE HELD AT 160,000 BBLS.

(Continued from Page 33)

attorney general of Texas is of the opinion the order will be legal and will stand the test in court if put to a test.

Advisory Committee Starts

The advisory committee held a meeting Saturday afternoon and started the foundation work for prorating the field. The operators pledged $10,000 Saturday morning to finance the machinery carrying out the order. This expense will be prorated among the producers in proportion to their production.

It is planned to have the umpire in the field several days ahead of the date set to make the order effective in order that he may select his staff and familiarize himself with well conditions. Each company will co-operate in offering the services of their engineers in aiding the advisory committee and umpire.

Members of that committee are as follows:

J. D. Collett, independent producer, Fort Worth, chairman; John R. Suman, Humble Oil & Refining Co., Houston, secretary; E. W. Woodruff, Southern Crude Oil Purchasing Co., Shreveport, La.; E. G. Allen, Roxana Petroleum Corp., Dallas; B. S. SoRelle, Pure Oil Co., Fort Worth; E. A. Landreth, Landreth Production Corp., Fort Worth and J. H. Reynolds, Cranfill & Reynolds, Dallas.

In the event of vacancies on the committee the committee will select members to fill the vacancies so long as there is a majority voting strength remaining. In the event four or more members leave the committee the operators will hold a meeting to bring the committee to full strength.

The advisory committee, co-operating with the umpire, expects to have considerable work in arriving at the potential production of many of the wells. Cranfill & Reynolds do not desire to open their gusher in the north part of the field to full capacity. J. H. Reynolds said the well would not be operated below 300 pounds back pressure or above 1,000 back pressure.

There are many wells in the field that would suck in water if opened up many believe, and the umpire and his staff of engineers will devise methods of arriving at the potential production of those wells.

RESOLUTION IS ADOPTED ON CONSERVATION

(Continued from Page 33)

vided for the services of Ray M. Collins, who has been umpire in charge of the Greater Seminole area, in the event that the owners of certain parcels of acreage failed in agreeing upon any plans which would follow an attempt to work out the curtailment of potential production.

After various speakers had voiced their sentiments regarding this matter, Judge Veasey pointed out the extreme difficulty of a single man handling a problem of such scope, and suggested that probably the umpire would hesitate to tackle this work without the assistance of an adequate committee to advise and assist him. The Greenslade plan then was amended, to provide for the appointment of a committee to assist the umpire.

Numerous producers voiced their opinions regarding the attempt to limit wildcat drilling, among them being Wirt Franklin, Ardmore, Okla.; E. P. Jones, Okmulgee, Okla.; M. C. French, Okmulgee, Okla.; W. N. Davis, Bartlesville, Okla.; Dana H. Kelsey, Independence, Kans.; Rush Greenslade, Tulsa, and E. H. Moore of Tulsa.

Mr. Moore, president of the Independent Oil & Gas Co., drew the mirth of the assembly when he stated that he would be very much interested in ascertaining just what an independent oil producer was, for to the best of his knowledge, all producers were strictly dependent, and had been that way for some time. Mr. Moore stressed the need for unity of action, and reminded some of the previous speakers who had been critical in their remarks that everyone connected with the industry was now in the same boat, and that anyone who rocked that boat was inviting disaster of the gravest sort.

Resolution Adopted

The Greenslade resolution follows:

Whereas, in the United States, the actual and potential output of crude oil has far outdistanced demand, causing prices to fall to unremunerative levels so that the market price of crude oil, broadly speaking, has declined substantially below the cost of production; and

Whereas, the remedy for this ruinous condition of the industry is believed to lie in lawful and genuine co-operation among the oil producers with a view to restrict and limit unnecessary drilling and unnecessary output of oil so as to bring about a balance between a current supply and demand;

Therefore be it resolved, by the oil producers of Oklahoma and Kansas:

First; we deplore the competitive drilling orgy a year ago in the Seminole area, resulting in excessive production of oil, but we commend the operators there for their voluntary and genuine co-operative action during the recent months, resulting in a sane, orderly, drilling program, and a wholesome reduction in the output of oil.

Second; so long as the present ruinous condition of the industry shall obtain, we pledge ourselves,

A. To drill no unnecessary wells, either in proven or wildcat territory, and

B. Genuinely and voluntarily to co-operate with our neighbors so as to avoid the unnecessary production of oil; and wherever we may be unable to co-operate, we shall invoke the good offices of Ray M. Collins, the umpire of the Greater Seminole area, and a committee of seven to be appointed at this meeting.

After some discussion, the meeting unanimously re-elected the original committee of five which first drew up the plans, and decided to postpose the election of two other members until a future time. The original committee was composed of E. B. Reeser, president of the Barnsdall Oil Corp., chairman; Dana H. Kelsey, vice president and general manager of the Prairie Oil & Gas Co.; Joe T. King, president of the Kingwood Oil Co., of Okmulgee, Okla.; E. H. Moore, president of the Independent Oil & Gas Co.; and John M. Lovejoy, vice president and general manager of the Amerada Petroleum Corp.

GULF COAST LUB OIL PRICES CONTINUE FIRM

HOUSTON, Tex., Apr. 24.—Gulf Coast lubricating oil markets continued firm during the week and with a tendency for fuel oils to strengthen developing this week there was a generally better outlook Monday and Tuesday. The lubricating market so far has not justified any additional price advances but sellers are having less and less difficulty in getting their prices and at the present rate of movement sales for this month will break all previous April records.

Fuel oil also has not advanced in moving prices although some sellers have been asking more money. A quantity of light fuel ranging around 20 gravity was quoted during the week at $1.30. Bunker fuel, however, was available at $1.15 and low grades around 95 cents

MARLAND CO. ELECTION

W. A. Moncrief of Fort Worth, Tex., was elected vice president of the Marland Production Co. at the organization meeting at Ponca City. This company was recently organized to take over the production activities of three former subsidiaries, the Marland Oil Companies of Texas, Oklahoma and Colorado. Mr. Moncrief is head of the Marland forces in Texas.

I. G. Harmon, recently transferred from Fort Worth to Ponca City, is also a vice president, and will direct the production activities in the three states and in New Mexico, which was formerly handled by the Marland Oil Co. of Colorado.

Other operating officials elected for the new subsidiary included E. W. Marland, head of the organization, president; C. C. Brown of Ponca City, general manager of all the Marland companies, vice president; J. R. McGinley of Ponca City, who was head of the former Oklahoma subsidiary, vice president, and Travis Golay of Denver, vice president; Alex McCoy of Ponca City, chief geologist, vice president.

LAGO DEVELOPMENTS IN ANNUAL REPORT

The preliminary report of Lago Oil & Transport Corp. and subsidiaries for the year ended December 31, 1927, shows consolidated net profit of $7,947,020 after depreciation and depletion, provision for taxes and proportion of profit applicable to minority interest, equivalent to $1.99 a share earned on 3,992,132 shares of no par stock. This compares with net profit reported in 1926, of $3,916,535, or 98 cents a share on 3,987,464 shares then outstanding.

Preliminary consolidated income account of Lago Oil & Transport Corp. and subsidiaries for the year ended December 31, 1927, compares as follows:

	1927	1926
Oil sales	$17,716,629	.....
Costs, oil purchases, marketing, etc.	4,616,019	.....
Depreciation and depreciation	3,617,818	.....
Inventory Jan. 1	291,728	.....
Balance	$ 9,191,064	.....
Inventory Dec. 31	926,221	.....
Balance	$10,117,285	.....
General expenses	1,429,194	.....
Miscl. interest (net)	45,851	.....
Profit	$8,642,240	*$4,162,319
Federal taxes prov.	675,000	230,000
Minority interest	20,220	15,784
Consol. net profit	$ 7,947,020	$ 3,916,535
Dividends	2,999,991	.....
Surplus	$ 4,947,029	$ 3,916,535

*After reserve of $1,054,136 for depreciation and depletion in 1926.

Consolidated balance sheet of Lago Oil & Transport Corp. and subsidiaries as of December 31, 1927, compares as follows:

	1927	1926
Assets		
*Oil lands, leases, concessions, etc.	$78,019,565	$66,508,098
Organization expen's	.....	362,699
Inven.ories	4,298,779	3,354,142
Accounts receivable	462,479	779,833
Cash	1,533,574	3,889,986
Deferred charges	335,997	249,958
Total	$84,650,394	$75,144,722
Liabilities		
Capital stock and interest surplus	†$69,594,420	$69,353,871
Minority interests	302,587	433,531
Notes payable	1,000,000	.....
Accounts payable	4,584,222	1,210,785
Federal tax reserve	802,963	230,000
Earned surplus	8,366,202	3,916,535
Total	$84,650,394	$75,144,722

*After depreciation and depletion. †Represented by 3,992,132 no par shares.

In the annual report, J. W. Stewart, vice president of Lago Oil & Transport Co., states gross crude oil production totaled 15,765,424 bbls., compared with 6,093,548 bbls. in 1926. The company completed 106 wells, making a total of 176, of which only 3 failed to produce at the end of 1927.

"During 1927 development of Lagunillas Field continued until it is now the principal source of the company's production," he continued. "This field has been drilled to a length of 6½ miles along the lake shore, with limits still undetermined. Westward into the lake a producing well has been completed nearly a mile off shore. Two exploratory wells, both producers, tend to confirm expectation oil-producing territory is continuous from Lagunillas to La Rosa.

"At Punta Benitez and northward toward La Rosa, Lago completed 21 wells so located as to block out a large extent of productive territory which can be developed more intensively when desired. The proven area at Punta Benitez extends more than a mile out into the lake. At La Rosa a rich new area has been opened up in the lake opposite the company's La Salina terminal and has been proven to extend more than 1½ miles from the shore.

"In Ambrosio Field 22 producers and 1 dry hole were drilled in 1927. Extent of the field has been approximately determined and a considerable portion of its development completed. Arrangements were made to shut in its production and only a small quantity of oil was withdrawn during the year."

He added that potential production has been increased and stands well above 125,000 bbls. a day. Additional storage tanks and lake tankers have been completed and put into service. Four more lake tankers are expected to be in service by June, increasing the fleet capacity to 85,000 bbls. daily.

"The new harbor and loading terminus at San Nicholas was completed and put into service the latter part of 1927. The company now possesses a safe harbor with ample berthing space for both shallow and deep-water tankers. Wharves are being enlarged to accommodate the increasing lake tanker fleet," Mr. Stewart concluded.

CONTINUED ACTIVITY IN OIL SECURITIES

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through others 985 communities with an estimated population of 5,000,000 in 1927. They had on their own lines 930,311 gas and 285,105 electric consumers at the close of last year. Acquisitions completed this year have added 75,000 consumers, including gas distribution in Toledo, Sandusky, Mansfield and other points in north central Ohio.

Appended table shows consumers served at the end of 1927 by each of the five major departments:

	Gas	Electric
Charleston group	92,664	.....
Cincinnati group	194,017	198,956
Columbus group	354,268	.....
Dayton group	53,756	86,149
Pittsburgh	235,606	.....

Behind gas and electric service for this wide area, the system owns the necessary natural gas properties, with essential trunk pipe lines for gathering, transport and distribution, and electric generating stations with transmission and distributing lines.

System holdings amount to 5,143,430 acres of gas rights in West Virginia, Ohio, Kentucky and Pennsylvania, of which only 696,993 acres, about 13 per cent, are operated; oil rights in 4,848,238 acres, of which 123,073 acres, about 3 per cent, are operated; and 38 plants for extracting gasoline from natural gas.

Properties had 8,271 producing gas wells at the end of 1927, and to handle takings therefrom and gas purchased there were 6,380 miles of field pipe lines, 7,964 miles of main transmission, and 9,037 miles of distributing lines. These pipe lines total 23,381 miles, and through them were handled the 131,362,361,000 feet of gas sold last year. Mainly for "stand-by" service, the system has 35,000,000 feet of manufactured gas capacity.

Columbia System does not make any intensive effort to develop oil production, though oil is of high grade Pennsylvania quality. The 2,708 producing oil wells yielded 1,316,832 bbls. in 1927. The more important casinghead gasoline department yielded 38,889,408 gallons of gasoline last year, for which there is a ready market.

MID-CONTINENT SECTION ENGINEERS IN SESSION

The regular meeting of the Mid-Continent section of the American Institute of Mining and Metallurgical Engineers was held at Tulsa Monday evening, April 23. Ray M. Collins, umpire in charge of the Greater Seminole Field, was the principal speaker, and he detailed the numerous legal and technical problems attendant upon the restriction of oil production.

C. E. Beecher, of the Empire Oil & Refining Co., presided in the absence of C. V. Millikan, chairman of the section. E. O. Bennett, chief petroleum engineer of the Marland Oil Co., from Fort Worth, Tex., gave a detailed idea of the proration policies and troubles of the West Texas fields.

SINCLAIR ACQUITTAL

WASHINGTON, D. C., Apr. 21.—The jury found H. F. Sinclair not guilty of charges of conspiracy to defraud the Government arising out of the lease of the Teapot Dome naval reserve.

MID-CONTINENT SCOUTS' PROGRAM FOR CONVENTION AT GUTHRIE

The annual convention of the Mid-Continent Oil Scouts and Land Men's Association, which will be held at Guthrie, Okla., on Friday and Saturday, April 27 and 28, promises to be one of the best attended and most interesting in the history of the association.

Plans for the business and social activities of the convention are progressing under the direction of Rex L. Dawson, assistant chief scout of the Carter Oil Co., chairman of the board of directors; Clifford E. Savage, of the Carter Oil Co., president of the organization; Charles E. Hewitt, of the Mid-Continent Petroleum Corp., Okmulgee division, vice president; R. F. Miller, of the Sinclair Crude Oil Purchasing Co., Seminole division, second vice president; and Simon Crites, of the Phillips Petroleum Co.'s Bristow district, secretary-treasurer.

Prominent in the plans which the city of Guthrie is making for the convention is S. M. Blevins, better known as "Puny," who is now an oil producer of that city, but who for many years was a rider of the roads around various parts of the Mid-Continent Field.

Registration of all scouts, land men and guests will be held Friday afternoon, and at 7 p. m. Friday the annual banquet will be held. An address of welcome will be made by J. H. Hildreth of Guthrie, and a response by Clifford E. Savage, president of the organization. The principal speakers will be James A. Veasey, chief counsel of the Carter Oil Co., and R. S. McFarland, secretary of the Twin State Oil Co. and president of the American Association of Petroleum Geologists; and Rex L. Dawson, chairman of the board of the association.

On Friday evening a reception for the visiting ladies will be held at the residence of Judge and Mrs. J. H. Hildreth. On Saturday morning the business meeting of the association will be held at 10 a. m., and election of officers for the coming year will take place. R. W. Kirchner, an oil producer of Bristow, Okla., will speak on the relationship of scouts to the men in the fields, and Dr. A. F. Melcher, formerly of the Marland Oil Co.'s research department, will deliver a paper on oil recovery. At noon, the chief scouts of the various companies will be given a luncheon, and the visiting members of the press will be entertained at lunch by members of the press of Guthrie. The afternoon will be occupied by a golf tournament, at which many valuable prizes will be awarded, and a fishing contest which will be very unique. A dance in the evening will conclude the convention.

Clifford E. Savage

ILLINOIS PIPE LINE NOT TO EXTEND LINE FROM LYTLE TO HOUSTON

By B. D. Stevenson

SAN ANTONIO, Tex., Apr. 23.—Humble Pipe Line Co. has doubled its contract with the Illinois Pipe Line Co. to take oil from the Illinois line at Lytle 20 miles southwest of San Antonio and run it to Ingleside. As a result, Illinois will not extend its line from Lytle to Houston as was announced. Contractors had assembled in San Antonio to build the line but are leaving. The new contract became effective Apr'l 16.

The changes are the result of the Humble company winning its suit with the State of Texas for the right to extend its line into the Gulf of Mexico 2 miles to deep water and also to the action of the federal Government in getting action through Congress to deepen the jetty channel at Port Aransas. The Government has accepted an offer of $105.000 from the Humble company for deepening this channel and the work is in progress.

Due to the uncerta'nty of the Humble company being able to handle the Illinois line crude that company had started preparations to build from Lytle east to the Houston ship channel. It is now apparent the Humble company will be able to handle everything through Port Aransas. Illinois Pipe Line extends from the Yates Pool to Del Rio tank farm of the Mid-Kansas Oil & Gas Co. and from that tank farm to Lytle. The Humble line extends from West Texas to Lytle and from there to Ingleside running north of the Ill'nois line. At Lytle Humble has a pump station and there receives crude from the Illinois line. There have been humors that the Humble company would still further increase the capacity of its line from West Texas to Ingleside. This could not be confirmed in San Antonio, but it is considered reasonable that it might increase the capacity from Lytle to Ingleside to take care of the additional crude runs from the Illinois line.

Within the past week or two, representatives of other major companies have been at Port Aransas and looked over Harbor Island. The island which is at the mouth of the pass belongs to the State of Texas, and the State will give 2.000 foot frontage to anyone who will utilize it and use it for dock purposes. Probability that an enormous amount of West Texas crude will have to be moved and the further fact that Port Aransas is the nearest port point to West Texas is causing companies with West Texas production to give the port consideration in their plans. The Humble company acquired dock facilities on the island directly in front of the jetty channel and is now preparing the ground for the foundation for its tank farm there and will extend its line from the Ingleside tank farm to the Harbor Island tank farm, giving it loading facilities both at Harbor Island and at Ingleside docks.

VENEZUELAN OUTPUT AT NEW HIGH RECORD

Venezuelan oil production totaled 7,600,708 bbls. in March, a new high record, averaging 245.184 bbls. daily, compared with 6,798,838 bbls. or 234.443 bbls. daily in February and 4,704,362 bbls., or 151,754 daily, in March, 1927. Former record output was 7,304,597 bbls., average of 235.632 daily, in December, 1927.

March shipments totaled 7,387,473 bbls., average of 238,305 daily, against February total of 6,759,663 bbls., or 233,089 daily, and 3,530,882 bbls., or 113,900 daily, in March, 1927.

Production by companies in March and February and in March, 1927, as estimated by O'Shaughnessy's South American oil report, follows (in barrels):

	Marc.	February	Mar., '27
V. O. C.	2,681,571	3,330,636	1,898,999
Lago	2,070,568	1,325,604	908,900
Lago-Maxud	.....	.....	63,200
Gulf-Creole	1,024,282	791,373	415,500
Gulf	252,058	305,560	278,760
Gulf-Ven. Pet.	557,000	452,500	267,000
Carib. Pet.	819,609	795,556	593,900
B. C. O. Ltd.	164,120	167,609	234,903
Gen. Asphalt	31,500	30,000	43,200
Total	7,600,708	6,798,838	4,704,362

Shipments by companies in March and February and shipments in March, 1927, follow (in barrels):

	March	February	Mar., '27
V. O. C.	2,807,420	2,359,427	1,348,200
Lago	1,873,173	1,780,544	816,682
Gulf-Creole	959,025	818,500	268,300
Gulf	201,900	327,400	202,400
Gulf-Ven. Pe.	521,575	491,100	200,300
Carib. Pet.	838,580	786,476	448,600
B. C. O. Ltd.	154,300	166,216	230,200
Gen. Asphalt	31,500	30,000	43,200
Total	7,387,473	6,769,663	3,530,882

Venezuelan oil production in the first three months this year totaled 21,392,849 bbls., compared with 13,985,798 bbls. in corresponding 1927 period. Shipments in the first quarter totaled 20,983,996 bbls., against 10,815,631 in the 1927 period.

INSTALL EXTRACTION PLANTS

Hurley Brothers, Tulsa, representatives for the Newton process equipment, have closed a contract with the Ohio Oil Co. to install the largest gasoline extraction plant in Louisiana. This plant, in Cotton Valley, is to produce 85,000 gallons of gasoline daily from gas at 500 pounds pressure under the supervision of E. B. Charlton. Newton equipment will be used throughout. The Ohio Oil Co. operates several plants of this type.

Hurley Brothers also have provided the Ward Gasoline Co., Breckenridge, Tex., with a Newton process gasoline plant for a gasoline production of 6,000 gallons daily. The same concern has installed Newton equipment for the Gillespie & Moran gasoline plant being constructed in St. Louis, Okla.

AUSTIN FORMATION WELL STILL MAKING OIL

By B. D. Stevenson

SAN ANTONIO, Tex., Apr. 23.—Joe Bruner's Austin chalk well, in Caldwell County, 1 mile north of Luling, has not yet been explained but is making oil. It will need some more wells to disclose the geology of it. The location of the well is shown on the accompanying map, and also the location of Bruner's No. 1 Wilson which has spudded in and is shut down at 50 or 60 feet. Located 3,000 feet to the northwest is the location of the M. O. Rayor well on the August farm and derrick has been erected for it. Bruner's well is approximately 5 miles nearly due southeast from the northeast end of the Luling Field. Total depth of the Bruner well is 2,688 feet and the first pay was at 2,557 feet where it was first completed and was a small well in the Austin formation and at 2,688 feet it is still in the same formation.

Last accounts late last week of the Bruner well were that the packer which first failed to hold was now holding and the well was flowing through the tubing making small heads at intervals of about every half hour and a bigger head at intervals of about every 12 hours and making a total of better than 30 bbls. a day. After the tubing had been set it first made heads at intervals of about every half day.

The feature about the well is that it is the first of any importance in this part of the country to be completed in the Austin formation. Other wells have had showings in that formation and United North & South Oil Co. completed No. 1 Callahan approximately 9 miles north and a little east of the Bruner well, in the Austin formation a few years ago and it has been flowing about 1 bbl. a day since then. It is perhaps the next best well in the Austin to be completed in this part of Texas.

Bruner found the Austin very sandy whereas it is usually chalk. Cores from the well showed the formation very much tilted and it may be pretty close to the fault plane if not in it.

Location of Austin Chalk producer, Caldwell County.

KANSAS SHALE GAS PRODUCTION GROWING

Miami and neighboring counties have just started to get the benefits from a new industry—shale gas production, says a Paola, Kans., correspondent of the Kansas City Star. The field extends all over Miami County and northeast to the limits of Kansas City.

Development of shale gas fields from Ninety-seventh Street south to Belton and Jaudon is now on. Then the fields of Miami County, east and northeast of Paola, are at the start of an intensive development. Already 14 rigs are drilling for shale gas. Shale gas wells at Stilwell show a connection between the Miami County and Belton Fields. Surveys and drilling indicate shale gas exists under much of Jackson and Cass Counties, in Missouri, the eastern half of Johnson and all of Miami County, in Kansas.

C. S. Shippey of Shippey, Madden & Parrish, which is laying pipe lines for the shallow gas fields, says there is enough shale gas to supply the homes and industries for years.

Shippey, Madden & Parrish have 13 miles of 8-inch line extending from Ninety-seventh Street through Martin City and Belton to Jaudon. A 6-inch line runs from Belton to Raymore. Grandview is also supplied with gas.

Lines east of Paola carry shale gas to supply Paola and Osawatomie. It has been necessary to build a compressor station to care for the surplus. Construction work is going on for a line from the Paola fields, northeast to Chiles, 8½ miles, covering the present field. If production vindicates the surveys, the line will be extended from Chiles to Jaudon, 13 miles, making connection from Paola to Kansas City.

In the Belton Field Shippey, Madden & Parrish are taking the gas from 40 shale wells. These wells are at an average depth of 470 feet and the cost is $600 to $650 a well. The wells in the Belton Field average 200,000 to 300,000 feet a day. Eight cents a thousand feet is paid at the well.

In the Miami County Field there are 14 new shale gas wells, producing up to 800,000 feet each. The wells vary in depth from 380 to 560 feet. Twelve additional shale gas wells will be brought in.

Those prospecting for oil have opportunity to drill less than 100 feet deeper and get a shale gas well. Shippey & Willis have two wells on the A. B. Coler farm, adjoining Somerset, that produce only 20,000 feet a day. It cost $1,275 to complete them.

Shale gas has been used for farm houses almost from the start of the oil and gas development in southeast Kansas. One Miami County well has been used for a farm house 29 years. Placed over the well, a separator takes the water from the gas and turns it back into the ground. Shale gas is composed of 94.8 methane and 4 per cent ethane. It has heat units of 982 to 990, which is greater than that of the southeast Kansas sand gas.

C. S. Shippey, S. J. Madden and Frank P. Parrish operated in the shale gas fields of Wilson, Neosho and Montgomery counties where the shale gas production now is 42,000,000 feet a day. First use of shale gas for commercial purposes in Kansas was in Wilson County in 1922.

There are 14-year-old shale wells in the Neodesha and Chanute fields that are producing.

HUMBLE'S INGLESIDE SHIPMENTS

SAN ANTONIO, Tex., Apr. 23.—Humble Pipe Line Co. shipped 504,442 bbls. of crude oil from its docks at Ingleside for the week ending Apr. 21, breaking all records for the 18 months the port has been open. The next best record was for the week ending March 23 when 501,833 bbls. were shipped. Grand total of shipments to the close of last week since the port was opened is 11,768,258 bbls. The biggest monthly record was for March when 2,005,707 bbls. were shipped.

CONSERVATION AND EFFICIENCY KEYNOTES OF THE EXPOSITION

Conservation and maintenance of present facilities and operations in the oil industry will be the keynote of the Fifth International Petroleum Exposition, to be held in Tulsa from October 20 to 29, this year.

"Our course and that of the exhibitors in the oil show this year is clearly marked, I believe," President W. G. Skelly of the Skelly Oil Co. and of the Exposition, said. "Conservation and efficient maintenance of what the oil industry has already developed is the watchword today, rather than the effort to expand operations. The Exposition this year is going to do what it can to promote this spirit of conservation for the good of the industry, and I am certain there has not been an exposition more timely than this one."

"I do not remember a time when there has been such stress on efficiency and so many attempts to stop the leaks as at present," Arch W. Leonard, treasurer of the exposition, said. "The margin of profit is so small on large volume that this is imperative. I believe the exposition this year will be invaluable in promoting efficient operation and both the buyer and the exhibitors will be greatly profited by holding the exposition."

Work on the organization of the exposition has already been started by General Manager J. Burr Gibbons. The grounds committee consisting of D. D. Wertzberger, Frank J. Hinderliter, Alf G. Heggem, S. W. Campbell and A. W. Leonard, made a survey of the grounds and buildings last week and will report recommendations for improvements to the board within a few days.

Much of the executive work of the board of directors this year will be in charge of the executive committee, which consists of President Skelly, Vice Presidents Hinderliter and Heggem, Treasurer A. W. Leonard, Secretary William Holden, General Manager Gibbons, and Directors W. M. Bovaird, George A. Dye, R. A. Griffith, Ernest Nicklos, Waite Phillips, R. C. Sharp, J. S. Sidwell, D. D. Wertzberger and R. M. Young.

Encouragement was received in a dispatch from Washington, stating that Congressman E. B. Howard of Tulsa had introduced a bill for the appropriation of $500 annually to assist in making the exposition an international affair. This would give the Federal Government a part in the exposition and put it in a position to send invitations to foreign governments instead of merely transmitting invitations from the corporation, as now done.

A reduction of 25 per cent in the cost of exhibit space in this years' Exposition, has been announced by General Manager J. Burr Gibbons, as brought about by the lowering of operating cost, following the completion of the new plant of the exposition.

In a letter sent to 1927 exhibitors, Manager Gibbons said:

"We are happy to announce a further reduction of $50 per booth on all inside space, and a proportionate reduction on outside open-air space. This brings regulation booths down to $150 each as against $200 in 1927 and $250 in the previous show. Outside space is reduced to 75 cents per square foot, as against $1 in 1927 and $1.25 in 1925. The customary extra charge of $50 for corner booths will be made.

"These reductions mean a saving of 40 per cent on space cost to exhibitors over the 1925 exposition. The same services extended to the exhibitors last year without cost, uniform signs, furniture, lights, gas, water, etc., in minimum quantities, as well as the installation of these services, will be furnished free of charge.

"The officers, directors and management stand pledged to effect every possible saving, service and co-operation to the exhibitors. The difficulties of the last show which grew out of the bad weather are being taken care of to insure ample parking space and better traffic conditions."

BRECKENRIDGE CLUB TO HOLD OPENING BALL MAY 3

View of Breckenridge Petroleum Club's lounging room.

The Breckenridge Petroleum Club, Breckenridge, Tex., is a concrete expression of Breckenridge's appreciation of the oil man and the part he has played in the present era of prosperity in the oil belt of Texas. Occupying the ninth floor of the 10-story Burch Hotel, its clubrooms are placed in an atmosphere of privacy, while its appointments, designed to add comfort and a homelike atmosphere, are the result of much careful planning. The club was organized in the fall of 1927. At that time the Burch Hotel was under construction and arrangement was made for a long-term lease, with the quarters to be laid out according to plans submitted by the organizers. A similar lease was obtained upon the roof garden of the hotel which is under the control of the club.

The club has 125 resident and nonresident members, the former paying a membership fee of $200 and the latter $50. The officers are Marshall R. Young, president; P. W. Pitzer, J. B. Dunigan, W. L. Knight, H. C. Pace and C. K. Springfield, vice presidents; C. A. Davis, treasurer; C. O. Loucks, secretary.

The club quarters consist of a spacious lounging room, a billiard and pool room, card rooms, dressing rooms and showers for the members, ladies' department with rest rooms and dressing rooms, and lobby.

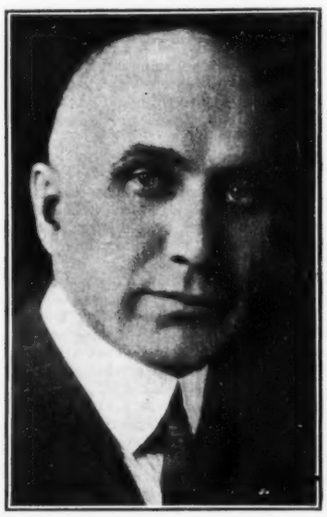
The club will be opened formally on May 3 with a ball in the roof garden. Oil men and their guests from throughout the State are expected to attend. Admission will be by invitation only.

GLEN G. LANGAN DIES SUDDENLY IN COLORADO

Glen G. Langan, vice president in charge of the Mid-Continent Field for the Hill-Hubbell Co., of San Francisco, Calif., manufacturers of protective paints, died suddenly at Colorado Springs, Colo., last week. Death was due to heart disease.

Mr. Langan was born at Lima, Ohio, 50 years ago, and has been identified with the petroleum industry since leaving school. He was connected with the Buckeye Pipe Line Co. and followed the lines of that concern through the Ohio and Indiana fields. For many years he worked under Martin Moran, now president of the Texas Pipe Line Co. of Oklahoma, and then general superintendent of the Buckeye lines.

From the central west fields, Mr. Langan traveled to the Pacific Coast where he was located for many years. After leaving the pipe line end of the business he became identified with the Hill-Hubbell interests, and was sent by that concern from San Francisco to open their Mid-Continent offices at Tulsa four years ago.



Glen G. Langan

Starting with a modest office in Tulsa the business under Mr. Langan's direction expanded to the point where a warehouse was necessary. This was built on the Sand Springs road, Tulsa, but the volume of business soon outgrew these accommodations, and the growth of the Hill-Hubbell Co. in the Mid-Continent Field demanded a factory with manufacturing facilities of its own.

Mr. Langan's exceptional personality won and held for him hosts of friends all through the oil country, and his death caused quite a shock to them. He is survived by his widow, who was at their home in Tulsa when the tragedy occurred. Funeral services were held in San Francisco.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

EDELEANU TREATING PROCESS

Will you kindly give me information regarding the Edeleanu process for treating lubricating stock, kerosene, etc.?—D. E. M.

There have been numerous references to the Edeleanu process in The Oil and Gas Journal. You will find the oils of your section mentioned in the issues of March 4, 1926, page 86, by A. E. Miller and September 23, 1926, page 146, by R. L. Brandt.

The process is so named because it was invented by Dr. L. Edeleanu of Rumania, and is also called the sulphur dioxide process, which is used in the liquid form as the purifying substance.

Liquid sulphur dioxide does not appear to react in the same way that sulphur acid does as a refining agent. That is, there is not an energetic chemical reaction but the liquid sulphur dioxide acts as a solvent for the removal of the impurities.

This process is being used on a very large commercial scale in a number of refineries for treating California kerosene. The treatment of such kerosene with sulphuric acid is very expensive, difficult and unsatisfactory. It requires about 4 pounds of sulphuric acid to treat one gallon of California kerosene distillate. This is at least 40 times as much acid as is required to treat kerosenes from the Mid-Continent oil fields.

The Edeleanu kerosene treating units in California are generally large enough to treat from 1,000 to 1,500 bbls. per day. The total cost of this treatment is said to be about 8 cents per barrel of oil treated. The treating loss is reported to be about 0.2 per cent.

The liquid sulphur dioxide is kept in a feed tank directly over a jacketed agitator provided with a mechanical stirrer and built to operate at pressures up to 60 pounds per square inch. The oil to be treated is charged into this agitator and the proper percentage of liquid sulphur dioxide dropped in form above. The temperature is regulated to what is proper for that particular kind of oil, usually about 18 degrees Fahrenheit, and the mixture stirred for about 20 minutes. The extract is drawn off into stills provided with closed steam coils, the heat from which drives off the sulphur dioxide. It is claimed that only 0.3 per cent of sulpher dioxide remains in the extract from the oil after this heating. These stills are generally run under a vacuum. The treated kerosene is washed with warm water to remove traces of the sulphur dioxide. If this does not remove it all, the oil is given a wash with lye. The percentage of sulphur dioxide used in such a treat depends entirely on the character of the oil treated. The percentage of chemical used, together with the temperature at which the treat is made, are the two important factors in this method of treatment. All moisture must be absent from the oil to be treated.

Liquid sulphur dioxide treatment has also been successfully applied to the treatment of high-grade lubricating oils, such as transformer or turbine oils, but in this case there are generally two or three agitators and the final oil after the liquid sulphur dioxide and extracts have been drawn off, has to be treated with a very small percentage of sulphuric acid in order to free it from the last traces of sulphuric dioxide. Lubricating oil treating plants of this type in Europe can treat about 300 bbls. of oil per day. A complete treatment can be made in less than an hour—that is, with ordinary lubricating oil.

GRAVITIES AND BOILING POINTS OF HYDROCARBONS

It has become necessary to obtain a curve of the average molecular weight of various hydrocarbon mixtures as a function of either the specific gravity or the average boiling point. Do you have any such data? If so I would be very much obliged to receive the same.—E. H. P.

It is not certain that this question is understood. The various petroleum products are mixtures of hydrocarbons which may differ to some extent with the source of the crude. If the particular hydrocarbons are known to be present in a mixture, then average boiling points or other physical properties may be calculated. The table below gives the constants of the pure hydrocarbons which may be found in the fractions from petroleum through the kerosene fraction.

Name—	Gravity Specific	A.P.I.	Boiling point degrees F.	Molecular weight	Formula
Methane	0.553	gas	—265	16.03	CH_4
Ethane	0.446	at zero C.	—135.4	30.05	C_2H_6
Propane	1.049	(air—1)	—49	44.07	C_3H_8
Butane	2.046	(air—1)	33.8	58.08	C_4H_{10}
	0.600	104.3			
Pentane	0.626	93.1	97	72.10	C_5H_{12}
Hexane	0.662	79.69	156.2	86.12	C_6H_{14}
Heptane	0.687	74.47	208.4	100.13	C_7H_{16}
Octane	0.706	68.92	258	114.14	C_8H_{18}
Nonane	0.741	59.46	302	128.16	C_9H_{20}
Decane	0.750	57.17	343.4	142.18	$C_{10}H_{22}$
Undecane	0.760	54.68	383	156.20	$C_{11}H_{24}$
Duodecane	0.770	52.27	417	170.22	$C_{12}H_{26}$
Tridecane	0.792	47.16	453	184.24	$C_{13}H_{28}$
Tetradecane	0.800	45.38	485.6	198.25	$C_{14}H_{30}$
Pentadecane	0.807	43.84	518	212.26	$C_{14}H_{32}$
Hexadecane	0.815	42.12	548.6	226.27	$C_{15}H_{34}$
Heptodecane	0.822	40.64	563	240.28	$C_{16}H_{36}$
Octadecane	0.830	38.98	602.6	254.30	$C_{17}H_{38}$

Many other hydrocarbons may be present in a petroleum product. Any curve to be accurate should be based analaytical data which have been developed from the definite fractions and the known hydrocarbons.

BENZOL FOR AIRCRAFT ENGINES

Newspaper articles have stated that benzol was being sent to the German plane in Labrador and I wish to ask if it is correct that this product is used by airplanes?—B. C. U.

It was announced last year that the Junkers ship was to be operated with the standard motor benzol made by the Benzol-Verbande, Germany. This permits when used either by itself or with the addition of gasoline, much higher compression ratios than are possible with gasoline alone. The Junkers motor is reported to use a compression ratio of 1 : 7 in place of the usual 1 : 5. There is economy of fuel, less engine weight, and greater r.p.m. There is high heat concentration and the heat due to compression tends to assist vaporization of the fuel which accelerates combustion.

Some research work has indicated that the high compression ratios of 1 : 7 to 1 : 7.5 are possible only with benzol. Aviation gasoline with high gravities permits a compression ratio of 1 : 5. If a fuel is not suitable to the high compression ratio there will be local over heating and consequent operation difficulties.

Recent investigations have shown that the former comparison of fuels according to their boiling point curves is not conclusive; the suitability of a motor fuel for use in a high compression motor is dependent on the ignition value, which is easily established in the laboratory. It is well known that the addition of different materials to gasoline permits it to be used at higher compressions; among these substances are benzol, toluol, xylol, xyladine, tetraethyllead, and iron carbonyl. While a mixture of benzol and gasoline can be used at low temperatures, with a mixture of gasoline and alcohol, the latter tends to separate at low temperatures, which makes it a dangerous fuel for aviation. In some countries this tendency has ben counteracted by the addition to the alcohol-gasoline mixture of a small quantity of heptalin or hexaline.

The general aim in motor construction is to obtain high performance with the smallest possible weight. Another strong motive for developing high compression motors is the fact that they are economical in fuel consumption, effecting a fuel saving of 8 to 10 per cent over the motors with 1 : 5.5 compression ratio. This fact, as well as the circumstance that Germany produces little crude petroleum, but considerable benzol explains the tendency in Germany to build internal combustion engines for using benzol or benzol-mixture fuels at high compression.

STATIC ELECTRICITY AND FLOWING LIQUIDS

Can you give me any authorities which have experimented with moving liquids to show that electricity which may cause fires is formed in this way?—L. S.

Gurwitch-Moore, Petroleum Technology, pages 158-162 gives numerous references to electrical properties with special applications to petroleum liquids. An important statement is that gasoline possesses the property of preserving electrical charges which are produced by its friction against solid substances; and this may be discharged, causing a spark, under favorable conditions. The storing of the lectricity appears to take place when the product is dry and cold. A spark strong enough to ignite petroleum vapors may occur between the liquid and some sharp point of the wall of the reservoir, for instance a piece of scale, a chip or some sharp pointed object floating on the surface of the liquid and gathers its charge, transmitting it to the wall in the form of sparks.

Some interesting notes on static electricity and its relation to fires in the oil industry are given in a paper by Alec M. Cameron, on Fire Risks in Industry, and reprinted as a monograph by the Institute of Chemistry. According to this author, Denezalek in Germany was one of the first to perform quantitative work on the problem of static electricity. He passed benzol and ether through pipes of different metals at varying speeds by means of CO_2 under pressure. The pipes were grounded and receptacles insulated, and the charges on the liquid were measured. Using benzol and copper pipes he found that at a speed of one meter per second a potential of 1,000 volts was developed on the benzol. At 2 meters per second the potential was 2,000 volts. The charge in this case was negative. Iron gave a higher potential, also negative, 2,000 volts being reached at 1.3 meters per second, and 3,000 volts at 2.5 meters per second. As a rule 500 volts was found to be sufficient to produce a spark of sufficient intensity to ignite a mixture of benzol vapor and air. Voltage is almost proportional to speed of flow. In a tube of cross sectional area of 1 inch passing 1 gallon per second, the speed of flow would be 23 feet per second. As has been mentioned, a potential of 500 volts may be regarded as about the minimum necessary to produce a spark capable of igniting a mixture of hydrocarbon vapor and air, but 1,000 volts would more often be necessary. Charges of opposite sign are produced on the pipe and on the liquid. The pipe can be readily grounded, but it is not so easy to ground the liquid.

NITROGEN IN CRUDE OIL

Have you any information about the amount of nitrogen found in crude oil? Is there any relation between the sulphur content and nitrogen?—H. W. E.

The quantity of nitrogen present in petroleum is usually quite small, less than 0.1 per cent in most oils, but there are a few exceptions in which appreciable quantities are found. Oil from the Pennsylvania districts have been reported to contain 0.008 per cent nitrogen; Rumanian oils, 0.09 to 0.12; California oil appears to contain 2.35 per cent.

There is no relation between the sulphur content and the nitrogen content, with the possible exception that those oils which are free from nitrogen frequently have large quantities of sulphur. Peckham found that the oils containing the larger quantities of nitrogen were those that had been produced from deep-lying formations. Gurwitsch explains that the nitrogen compounds of the crude are absorbed by the strata in the migration of the oil from great depths towards the surface of the earth.

Analyses indicate that the concentration of the nitrogenous substances follow the same rule as that for sulphur; that is in the higher boiling fractions and in the fuel oil or residue. Maybery detected 0.31 per cent nitrogen in the coke from Ohio crude and 0.38 per cent in the coke from Canadian oil.

The compound ammonia, which is largely nitrogen, if frequently noticed during the distillation of petroleum, and especially when the reduction is approaching the coking stage. Nitrogen compounds have been found in the waters associated with petroleum, and some of these waters contain ammonium salts.

SMITHWELDING

[PATENTED]

The Largest Still Ever Built

This still is the largest cracking still ever built, almost 70 feet long, 10 feet inside diameter, and wall thickness of 3½ inches, weight 366,600 lbs. The largest still built previously was also of Smithsteel, with a length of 65 feet, diameter of 8 feet and wall thickness of 3½ inches, weight 268,000 lbs.

SMITHWELDING is the exclusive and patented method of electric welding employed by the A. O. Smith Corporation in the fabrication of Smithsteel Pressure Vessels.

Nearly three years ago, the Oil Industry was the first industry to grasp the possibilities of greater freedom from limitations in design and size possible with Smithsteel Vessels.

Since that time 622 Vessels have been put in service as cracking equipment in oil refineries.

They are all in service *today* and are all Smithwelded.

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SMITHSTEEL
CRACKING STILLS

Of Interest to Sales Departments

REFINERS INTERESTED IN GREATER EXPORTS

Refiners and marketers have been observing the foreign market with considerable interest since it holds great possibilities for increased sales of petroleum products. European countries are being watched in particular. Various means have been resorted to by the governments in these respective countries to stimulate refining and production wherever possible and France has outlined some very definite import laws that tend to aid refinery operations there. A summary of conditions there, however, does not indicate that a falling off of exports to France will result according to opinions of Consul D. C. Woods and Vice Consul D. H. Slawson of Paris.

Aside from a refinery handling the small production of the Pechelbronn Field in Alsace and a plant at Douai belonging to the Anglo-Persian Co., which operates intermittently, there is no refining of crude petroleum in France, although rectification and distilling of lubricating oil is done. Many years ago 10 companies erected refineries, but, with the exception of the Douai plant, all of them have been closed by the pressure of foreign competition and the lack of government aid. The cost of construction of a refinery, estimated at $2,500,000 to $3,000,000; the relative lack of capital in France for such enterprises; the experience of the former refineries; and the uncertainties of future legislative policy will probably delay the renewal of attempts in this direction, even with the present governmental encouragement.

Imports of gasoline in 1927 showed an increase of 137,441 tons over 1926 receipts, while those of petroleum residues increased 128,130 tons. Decreases in imports in 1927 were noted in the case of kerosene; and, more conspicuously, of lubricating oils. The decrease in imports of lubricants reflected the period of crisis experienced by certain French industries and also the increased manufacture of French lubricating oils by the new Pechelbronn refinery in Alsace.

NAVIGATION OPENS ON LAKES

CHICAGO Apr. 23. — Navigation is opening rather early on the Great Lakes this season, several cargoes being prepared now. This means that the refineries with docks on the lake shore or the rivers emptying into the lakes will be able to supply their bulk stations at lake ports by tank ship. There are many of these. At Whiting the Standard Oil Co. has docks equipped for the loading of its lake fleet and at East Chicago the Roxana Petroleum Corp. is preparing its docks for the shipment of petroleum products by its tanker fleet. Although located in different municipalities, the docks of the Standard Oil Co. and the Roxana Petroleum Corp are directly opposite. Each of the two companies has numerous bulk stations at lake ports, those of the Roxana extending to Ohio cities such as Toledo and Cleveland.

RULING ON TRADE MARK

WASHINGTON, D. C., Apr. 21.—The Commissioner of Patents has affirmed the decision of the Examiner of Interferences holding that the Marine Oil Co., Ltd., is not entitled to register the word "Merolene" as a trade mark for lubricating oil. The registration of this trade mark was opposed by the Standard Oil Co. of California. The similarity of the words "Merolene" and "Zeroline" (now used by the Standard) as trade marks for the same goods, was the basis of the decision.

Short Talks on Refinery Products

By W. T. Ziegenhain

HOW ASPHALT BASE LUBRICANTS ARE MADE

The manufacture of lubricating oils from asphalt-base crudes differs from that of making lubricants from paraffin base crudes principally because they are free of wax. They do not need to be processed through a wax house and then redistilled as is the case of parrafin-base lubs.

Asphalt base lubricants are distilled direct from the crude in the same manner as gasoline, kerosene and other oils. The distillation is usually carried out in a series of shell stills and the different grades are distilled off and recovered successively, the more viscous grades distilling off last. In many cases the crude is reduced to coke and the oil that distills off last then is very heavy and has a very high viscosity. Large quantities of steam are used in the stills to agitate the oil as it boils and this also tends to minimize oxidation. This in turn makes the oil more easy to treat to color.

As the several grades are distilled over continuously to make for instance a 200 viscosity, a 500 and a 750 viscosity oil, each is collected in a separate tank and when the volume of any of them is sufficient to be charged to the chemical treaters the tank is emptied and the batch treated. The treaters or agitators are high, lead-lined tanks, usually having a cone shaped bottom. The oil to be treated is pumped into one of these and then concentrated sulphuric acid is added. The oil and acid are thoroughly agitated for an hour or more, depending upon the kind of oil being treated and then the acid is allowed to settle out. In some cases a second acid treatment is given the oil. When the acid has settled out, it is drained off and the oil then washed with water by means of a spray from the top, or the oil is agitated with a caustic solution which neutralizes any acid suspended in the oil. Then it is run to storage. It may be sold without further processing or it may be filtered.

The filtering operation simply consists of allowing the oil to percolate through a bed of filter earth. The filters are small tanks open at the top and filled about three-fourths full of a special earth having the property of adsorbing coloring matter. As the oil slowly percolates through the earth the coloring matter and any traces of tarry matter or water are removed and the oil is rendered bright and much lighter in color. These oils are designated as filtered oils and carry a high price on the market.

SHIPS' BUNKER SALES 81,567,000 BARRELS

According to returns received by the American Petroleum Institute from the principal companies engaged in the marine fuel oil business, 81,567,000 bbls. of fuel oil were delivered for ships' bunkers at United States ports and at United States Insular possessions in 1927, compared with 76,524,000 bbls. in 1923, an increase of 5,043,000 bbls., or 6.6 per cent. This is exclusive of fuel oil delivered to the United States Navy. The United States Navy in 1927 consumed approximately 6,300,000 bbls., compared with 6,500,000 bbls. in 1926, this including Diesel oil and covering consumption by naval vessels, but not including consumption at yards and stations. The indicated total marine and navy consumption is shown as follows:

Consumption of Fuel Oil by Merchant Vessels and United States Navy

	1927 Bbls.	1926 Bbls.	% Inc.
By merchant vessels	81,567,000	76,524,000	6.6
By U. S. Navy	6,300,000	6,500,000	*3.1
Total	87,867,000	83,024,000	5.8

Of the total deliveries of 81,567,000 bbls to merchant vessels in 1927, 66,451,000 bbls. were domestic fuel oil and 15,116,000 bbls. foreign fuel. Deliveries of domestic fuel oil totaled 66,451,000 bbls., compared with 57,249,000 bbls. in 1926, an increase of 9,202,000 bbls., and of 15,116,000 bbls. of foreign fuel oil compared with 19,275,000 bbls. in 1926, a decrease of 4,159,000 bbls.

Deliveries at Atlantic Coast ports totaled 31,454,000 bbls., 38.6 per cent of the total, compared with 31,286,000 bbls. in 1926, 40.9 per cent of the total in 1926, an increase of 168,000 bbls. The deliveries of domestic oil at Atlantic Coast ports totaled 17,512,000 bbls., compared with 17,683,000 bbls in 1926, a decrease of 171,000 bbls. Deliveries of foreign fuel oil at Atlantic Coast ports totaled 13,942,000 bbls., compared with 13,603,000 bbls. in 1926, an increase of 339,000 bbls.

At Gulf Coast ports the imports totaled 14,203,000 bbls., compared with 15,442,000 bbls. in 1926, a decrease of 1,239,000 bbls. Deliveries of domestic oil at Gulf Coast ports totaled 13,234,000 bbls., compared with 9,870,000 bbls. in 1926, an increase of 3,364,000 bbls.

Deliveries at Pacific Coast ports totaled 34,415,000 bbls., 42.2 per cent of total deliveries, compared with 28,531,000 bbls., 37.3 per cent of total deliveries in 1926, an increase of 5,884,000 bbls. All deliveries at Pacific Coast ports were domestic oil; 1927 deliveries comprising 51.8 per cent and the 1926 deliveries 49.8 per cent of total oil deliveries.

FUEL OIL DELIVERED TO SHIPS' BUNKERS—1927 AND 1926

(Barrels of 42 gallons)

	Domestic Oil Bbls.	Domestic Oil % Total	Foreign Oil Bbls.	Foreign Oil % Total	Total Bbls.	Total % Total
At Atlantic Coast ports—						
1927	17,512,000	26.3	13,942,000	92.2	31,454,000	38.6
1926	17,683,000	30.9	13,603,000	70.6	31,286,000	40.9
At Gulf Coast ports—						
1927	13,234,000	20.2	969,000	6.4	14,203,000	17.4
1926	9,870,000	17.2	5,572,000	28.9	15,442,000	20.0
At Pacific Coast ports—						
1927	34,415,000	51.8	.....	.....	34,415,000	42.2
1926	28,531,000	49.8	.....	.....	28,531,000	37.3
At Insular Possessions—						
1927	1,290,000	1.9	205,000	1.4	1,495,000	1.8
1926	1,165,000	2.1	100,000	.5	1,265,000	1.6
Total—						
1927	66,451,000	100.0	15,116,000	100.0	81,567,000	100.0
1926	57,249,000	100.0	19,275,000	100.0	76,524,000	100.0

OIL BURNER MAKERS IN SELLING CAMPAIGN

A number of the leading makers of oil-burning furnaces have started their spring selling campaign with the offering of special inducements for summer installation of heating units. One of the largest is offering a cut of $50 in the installation cost on all plants put in from now on until next fall.

In launching this campaign, the manufacturers point out that they are in position to make much more satisfactory installations during the summer months, as that is their slack season, and their men are not rushed in installation and maintenance work. In addition, they declare, they can give the consumer a better price on his plant because a good volume of summer business tends to stabilize their sales and enables them to keep their manufacturing and installation facilities engaged the year around.

There has been a satisfactory response to the spring advertising of the manufacturers and it is believed that a material increase in the use of furnace oil will be witnessed during the next winter season as a result of this development.

TRADE MARK CANCELLED

WASHINGTON, D. C., Apr. 21.—On petition of the Ford Motor Co., the registration of "Fordgas" as a trade mark has been cancelled. In this case, the First Assistant Commissioner of Patents affirmed the decision of the Examiner of Trade Mark Interferences.

William H. Godfrey was granted this registration November 3, 1925. The Ford Motor Co., petitioner was granted the use of the term "Ford Benzol" used on its motor fuel tanks. It was decided that the two notations being substantially the same in significance and meaning, the registrant was not entitled to registration and he had not had such exclusive use for the year prior to his application as to entitle him to registration.

PANAMA GASOLINE SUBSTITUTE

The government of Panama is to undertake the operation of the dehydrating plant originally erected by a concessionaire intending to manufacture a mixture of gasoline and alcohol to be used as motor fuel. The contract with this company has been cancelled and the manufacture will be carried on by the government, which has raised the import duty on gasoline from 5 to 10 cents a gallon in order to encourage sales of the alcohol mixture.

CARBURETOR TESTS

The United States Bureau of Standards is now making exhaustive tests to determine the type of carburetor most suitable for the present motor fuels both for automobiles and airplanes. This work is intended to lead toward the development of a carburetor that will most economically utilize the gasoline and at the same time operate satisfactorily at high altitudes and at sea level.

Rapid strides are being made in the testing of aircraft engines, at high altitudes. The bureau's altitude laboratory has been so remodeled that the largest engines may be tested under atmospheric conditions seldom reached in actual flights.

The bureau is now concentrating on carburetor problems of automobiles, operating under approximate sea level conditions, as well as carburetors of airplanes at high altitudes. Another phase of the work at the present time is the study of various fuels for aircraft engines.

In the days of St. George there were dragons to be slain and fortunately for "Merrie England" they could let George do it. In the Oil Industry, there have been formidable "DRAGONS" too—obstacles to challenge the chemist in his laboratory—obstacles that presented new problems to the producer, to the marketer, to every branch of the Industry.

Chestnut and Smith Corporation have always given freely of their help in meeting these obstacles. They did not say to the refiners or to the manufacturers of Natural Gasoline—"Let George do it."

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Is the Refining Industry Helpless?

National Petroleum Association Told How Manufacturing Branch of Oil Business Might Save Situation

By G. C. Davison*
President, Tri-State Refining Co.

Judging by comments of some men in the refining industry, and by the earning statements for 1927 which have been recently published, the refining industry is far from happy and prosperous. But before answering the question contained in the title of this paper, "is it helpless," it would be advisable to attempt to make a diagnosis of the case.

The refining branch of the industry seems to be suffering from the action of natural laws, aggravated by conditions now existing in its allied branches, production of crude, and marketing of refined products.

The first natural law that has played an important part in bringing about present conditions, is the law of diminishing returns. This law is very old, and fundamental, and applies to practically all industries. It means that when an industry shows a very great margin of profit, capital and ambitious individuals are attracted to it. The supply is increased, and competition reduces profits. When profits are reduced to a certain point for the industry as a whole, there will be some plants operating at a loss, so that one by one, they shut down, and in a measure help relieve the situation.

This law has been working in a very striking manner in the petroleum refining business for the past seven or eight years. Returns on investments have been diminishing, as shown by earning statements. A rough measure of these diminishing returns is shown by the narrowing margin between tank car price of gasoline, and price of crude oil.

The operation of this law can be stopped by a monopoly, such as the manufacturer of articles protected by patents, or by a rapidly increasing demand equal to or in excess of supply.

While the refining branch of the industry, like all industries, is subject to the workings of this law, it can adapt itself to it, and by an intelligent course of action always realize a fair profit, even if the enormous margins of seven or eight years ago have disappeared forever.

The second natural law which is furnishing the refining industry, is that of supply and demand.

Example of Other Industries

You are all so familiar with present conditions in the production of crude oil I will not go into that, except to remark that crude production and refining are so closely related, that many seem to believe that when we have a flood of crude oil the market is inevitably flooded with low-priced unprofitable gasoline. There is no question about such having been the fact during the past year. But as to whether it is inevitable, or necessary is another question.

Other industries furnish us with examples of how these two natural laws operate, and how an industry can, after having severely suffered, save itself. A fairly parallel case is that of the sugar industry. Sugar is a world commodity, like petroleum. Because of the World War, European beet sugar production was reduced to about one-fourth normal. Sugar went to unheard of prices in 1920. Millions of capital went into Cuba. The production of that island was more than doubled. In the meantime, Europe increased its acreage. So for several years we have had an overproduction of raw sugar. Cuba was forced to sell at 2 cents per pound when the cost of production was nearer 3 cents. To correct the situation the Cuban government took a hand, and deliberately cut the production. Last year with a supply of cane sufficient to produce 6,000,000 tons of raw sugar, the mills were permitted to grind only 4,500,000.

This year Cuba has ordered its mills to produce only 4,000,000 tons, though the acreage planted is capable of producing a much larger amount. It was either a case of rationalizing production or seeing the price drop even below 2 cents. Cuba has conducted negotiations with other countries with a view to co-operation, to rationalize production.

It is too early to forecast just how this movement will turn out. In any case it is interesting, and the petroleum industry should watch it in the event that it may some day have to take similar action. So much for the raw material, corresponding to our crude oil.

Concurrently with the overproduction and unprofitable prices, the sugar refineries of this country were in a demoralized state. Some of them, like some of the oil companies, had their own production. They were fighting each other for business, making secret concessions, and breaking every law of good trade practice until they reached a point where something had to be done about it. Our own refining branch seems to be rapidly following in their footsteps.

To correct this deplorable condition the sugar refineries a few months ago organized the Sugar Institute. Certain bad practices were done away with. Thus far they have not artificially boosted the price of their refined product. But they have stabilized the market, have cut out unethical practices, and from all appearances conditions in the sugar refining industry have been greatly improved.

Effect of Co-operation

The copper industry is another example. The parallel is not quite so close as in the case of the sugar producing and refining industries, but it has been shown what can be accomplished by co-operation, by the rationalization of production, and the stabilization of prices.

Other examples could be mentioned. If we look on labor as a commodity, subject to the law of supply and demand, the labor union in a broad sense can be regarded as an organization to stabilize price though it can not rationalize supply.

One other industry that furnishes a splendid example of the working of the law of supply and demand, is raw cotton. Here is a world commodity of which the United States produces the greater part of the world's supply. It has a real market, with exchanges in New York, New Orleans, Liverpool and other centers actively trading every working day in the year. Looking back over a period of many years, considering size of crop and prices, one sees almost a perfect example of the free working of the law of supply and demand. Some years we grow a bumper crop exceeding by several million bales, expectations based on average yields. The inevitable result is a drop in price, often far below cost of production. Again, due to freakish weather conditions or depredations of the boll weevil or both, the crop falls short of average expectations, or normal requirements, and we see prices soar. This market has shown that cost of production has little or nothing to do with price. If the supply is greater than needed, price often goes far below cost of production, and conversely, if the supply is short, the price can go to double the cost. Paradoxical as it may seem, the south is usually more prosperous and gets more for its cotton when it has a bad year and raises a small crop, than in the good years when it raises a big crop. The south so fully understands the situation, that it, through banks, state governments and associations, manages to roughly rationalize supply and demand by increasing or decreasing acreage from year to year as the market and world demand require.

When such an industry, made up of many thousands of little planters and big planters, subject to the vagaries of weather and insects, finds it possible to roughly adjust supply to demand, how much simpler is the problem of the petroleum refiner.

Range of Price

Out of curiosity I looked up the size of crop and prices, covering a long period of years, and reduced them to a common denomination, calling normal world's consumption 100 per cent—and therefore normal supply 100 per cent. For price, I used cost of production as 100 per cent, as costs vary from year to year with the price of the dollar. Then by expressing departure from these bases in percentage, it is possible to plot the relations between costs, prices, supply and demand over a long period of years.

For cotton, the price goes up rapidly with a shortage of supply. When the supply is 10 per cent below normal the price averages about 15 per cent above normal.

When the supply is in excess of normal, price does not fall so rapidly. When supply is 10 per cent above normal, price is 10 per cent below normal.

When supply is excessively above normal, price falls to about 65 per cent of normal or cost of production.

There is, of course, a point below which price will not apparently drop, regardless of amount of supply. For cotton this is apparently about two-thirds cost of production. The low point in price of sugar during the past seven years also happens to have been about two-thirds cost of production.

If we knew the cost of production of crude oil, we would probably find that on the average, present prices are somewhere about this proportion.

This tells the story of one big industry, and is probably applicable in a general way to others, including petroleum refining. If so, it should serve as a warning, as showing the possibilities of overproduction and consequent low prices. Thus if the cost of producing gasoline in the Mid-Continent area is now 6 cents, it would be possible to have the price go as low as 4 cents with unlimited overproduction.

Regulate Output

The petroleum refining industry is relatively fortunate. It has a steadily growing demand for its products, and a market created for it at no cost to itself. It can have perfect control of its output without making any great sacrifices. While we hear much complaint about the present situation, it is very mild compared with what other industries have experienced. We have seen what steps other industries have had to take to save themselves. So, profiting from their experience and example, it should not be difficult for the refining branch to regulate its output in accordance with the demand, and obtain for its products a price showing a fair profit.

In fact, even without an association embracing the entire refining industry, there are signs that heed has been taken, and a more sensible policy being pursued. But if attention were paid to refinery statistics, and a common sense policy tacitly adopted, with a sense of fair play, the refining branch of the industry would have little to worry about. At the same time the public would have no cause to complain, as a stabilization of profit within moderate bounds would be the best safeguard for the future that the public could have.

There is also a modern law of business that seems to be recognized more and more. That is the law of service. Today the refining branch has an unusual opportunity to give real service in a big way, and I believe would do so if it could only get together and adopt a few general policies. This great opportunity for real service is along the lines of conservation. We have today above ground over 600,000,000 bbls. of oil. Crude is being produced faster than required. Yet no one knows what our total reserve supplies underground may be. While West Texas is now flooding the market, one eminent geologist has gone on record as predicting a total recovery of only 1,000,000,000 bbls. from that entire area. The greatest estimate is only 3,000,000,000 bbls. While a billion barrels is a lot of oil, it is, after all, only a little more than one year's supply at current rate of consumption. So perhaps, after all, these recent discoveries have added only two or three years to previously estimated supply. Where the refining industry could render a great public service in the present situation is:

Suggested Remedies

1. Shut down cracking plants or run them part time, and skim crude sufficient to meet present demand for gasoline, thus preventing evaporation loss of crude in storage. It could store the resultant fuel oil as cracking stock without loss from evaporation.

2. As soon as crude in storage has been reduced, use more fuel and gas oil for cracking, leaving crude underground where it will not evaporate.

3. Instead of forcing fuel oil on the market, get all the gasoline possible out of it by cracking.

4. Those big companies in a position to do so, to acquire a reserve production of crude, by buying up proven territory, and not drilling it until the crude is needed.

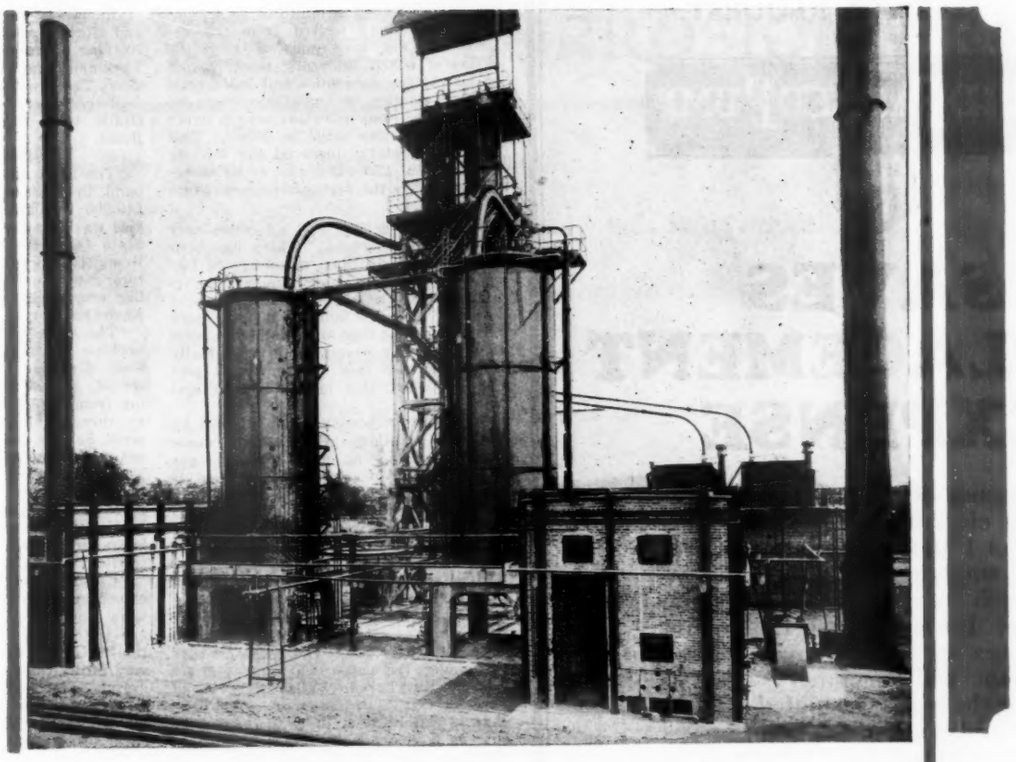
This policy would practically double the ultimate supply of gasoline, as compared with present methods. The public would be assured of more stable prices and an adequate supply of motor gasoline for many years to come. And in the meantime the refining industry could enjoy a fair profit for an equally long period.

Of course such a policy as this cannot be carried out under present conditions where there is no general association and no co-operation. But in view of what other industries have already accomplished, and with such a wonderful opportunity to so easily perform such a great national service, it is earnestly hoped that the leaders of this great industry will find some way to get all the 318 plants to co-operate along some such lines, and to do so with the full approval of the Government and the public.

The other alternative is to go ahead blindly, overproducing, each unit thinking only of itself, and developing cut throat competition, which will virtually wipe out all profits. We seem to be drawing to such a condition. It is to be hoped that before disaster overtakes the industry, steps will be taken to produce and market in a rational manner, as so many modern industries have done. As I understand it, it is only unreasonable combinations in restraint of trade that are illegal and frowned upon. It is due to the fact that the oil business has been the target of demagogues for so many years, and has been investigated so many times, that its leaders

(Continued on Page 174)

*Before semiannual meeting of the National Petroleum Association, Cambridge Springs, Pa.



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FLUID PACKED PUMPS

WET GAS PRODUCER IN AUSTRALIA SIMILAR TO TURNER VALLEY WELLS

By Victor Lauriston

CHATHAM, Ontario, Mar. 17.—That Australia has developed a well producing wet gas and light oil similar to that of the Turner Valley is indicated by a communication just received from Queensland The discovery comes as the culmination of nearly 20 years' work carried on by various companies and individuals in the vicinity of the little town of Roma. The communication says in part:

"The find was made at Roma. This is a little country town on the Darling Downs about 250 miles west of Brisbane. Queensland is the northeasternmost State of Australia.

"This is the first real oil strike ever recorded in Australia. There has been quite a lot of drilling, a number of Canadian and American drillers having participated at various times. Numerous oil seepages and gas indications have been reported at one time and another in practically all the States, and occasionally there has been talk of commercial production. But this looks like the real thing.

"The discovery well was put down by the Roma Oil Corp., which after a couple of years of drilling got the oil and gas sand at 3,708 feet. Thus the field is going to be a deep-drilling proposition. The well started off as a gasser. It is claimed the open flow production reached 20,000,000 feet. After the first blowoff, some oil came with the gas.

"The production here looks very much like your Turner Valley production in Canada. The gas is apparently a wet gas. It runs around one pint of petrol to 1,000 feet of gas. The crude oil that comes with the gas is light stuff, and resembles the Turner Valley light crude very closely. The crude oil is so light that it can be used in cars and trucks just as it comes from the well, without refining The well is a good gasser, and when it settles down a fair oil production is expected, but no figures on the oil production have been given out so far.

First Just a Cigar Lighter

"This Queensland development has been a story of ups and downs, principally downs. Development started as a result of drilling for artesian water some 30 years ago. In 1900 a deep water well got a few traces of gas at 3,683 feet. It was just a cigar lighter, but it served to get people started. After three years blowing open the production had actually increased to 70,000 feet a day. Then the Roma Town Council decided to harness the gas and use it for street lighting. A gasometer was built and the streets lighted with gas for about 10 days. Then the well lay down and quit.

"The next move was the organization of the Roma Mineral Oil Co. to go after production in earnest. This company, with some help from the State government, got to work in July, 1907. In October, 1908, at 3,702 feet a heavy gas flow was struck. The gas caught fire from the boiler and burned till December 11. Then drilling was resumed, the well either caved or flooded from the bottom of the hole, and the gas production was lost. This was the famous Roma No. 3 well—the great burning well.

"The company made strenuous efforts to carry the hole deeper. It kept pegging away till March, 1910 Below the gas sand it got into a soft running or caving horizon in which the tools persistently jammed. When the company at last quit work it had lost three strings of tools in the hole.

"The Queensland government began to take a decidedly active interest in the oil prospects at Roma. In fact, the Australian Commonwealth government and the various state governments are very keen to develop a native petroleum production for the simple reason that right now Australia is wholly dependent on imported petroleum for its supplies. Anyway, the Queensland government called in expert geologists, and a lot of investigations and reports were made in the next few years.

"Some years ago a new company, the Lander Oilfields, Ltd., was organized and drilled a test at Orallo, 35 miles north of Roma. It ran into a lot of hard luck and finally went into a receivership. Nothing daunted, its backers went to work and organized the present Roma Oil Corp. The new company rented the rotary drilling rig and machinery used for the Orallo test, and proceeded to drill at Roma.

State Offers Aid

"The State government took an active hand in this test. A state subsidy of £10,000 was granted, and geological advice was furnished free of charge by the State Oil Board to the operators. The Roma Oil Corp. went ahead with the rotary test, and now it has what looks like commercial production—the first in Australia.

"The State no longer allows operators to blow off the gas pressure from the well. Gas has to be shut in and conserved. At last reports free oil was flowing from the control head, forcing itself up through about 2,100 feet of drilling mud. So that the well, once it is cleaned out, ought to be a pretty fair producer. The gas is to be piped to Roma for domestic purposes. This will be the first place in Australia to use natural gas for heating and cooking. The Roma Oil Corp. is starting a second well and has staked territory over a radius of about 15 miles.

"Under Australian law, petroleum is owned by the State; but the state mining laws are very fair, and the governments are too keen to develop native production to throw any serious obstacles in the way of legitimate development. In fact, everybody is tickled at the thought that this native production may mean, ultimately, lower prices for petrol—that is, gasoline.

"An American or Canadian, by the way, finds it a bit hard to accustom himself to the Australian drilling vocabulary, which follows the old-country dictionaries—that is, they say 'boring' when they mean 'drilling,' and so forth.

Deep Drilling

"The oil is, so the geologists say, found in marine beds of Jurassic age. Beds of this age extend over thousands of square miles in the State of Queensland alone, and indications of oil have been frequently met in drilling for artesian water. Some of this drilling has gone tremendously deep. The Springleigh well went down 7,000 feet, and traces of oil showed on the warm water it developed. The same thing happened with the Longreach town well. But even counting these deep tests for water, there has been relatively little drilling—no adequate test of the oil and gas possibilities of even the populated parts of this huge island continent. You people think that Alberta is away behind the States in the matter of drilling tests. Well, Australia is just about as much behind Alberta, when the immense areas are considered.

"The State governments do all they can to encourage development, but drilling hitherto has been so deep and so costly that people hesitate to put their money into it. Then we lack the familiarity you people in Canada have with the oil game, with the biggest oil development in the world just south of your frontier, and American oil men constantly coming and going.

"There is very little drilling just now in Australia. I have heard there are good prospects in the southeast corner of the State of South Australia A geological survey is at work on the border line between South Australia and Victoria, and a company is drilling for oil in this district about 6 miles from the mouth of the Glenelg River. There are oil shales in Tasmania; but like most oil shales, they will become commercially valuable to a large extent only when liquid oil is exhausted If the Roma find holds up, it is pretty sure to stimulate drilling operations not only in Queensland but in other parts of Australia."

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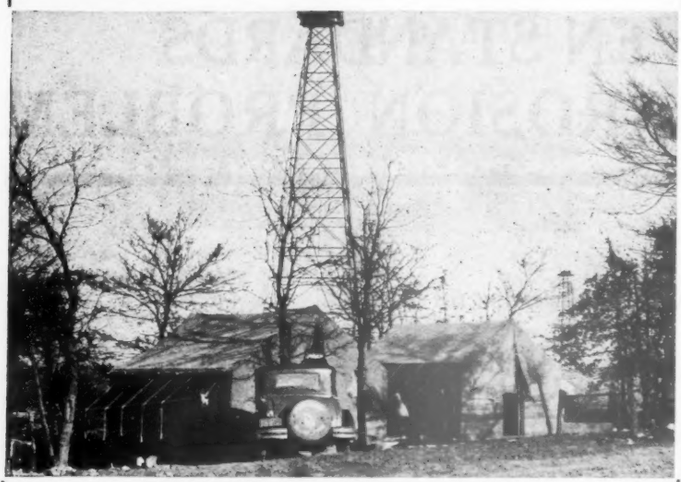

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The Exploration Co.'s No. 3 Matador Land & Cattle Co., C of SE of Section 21, Block 0-2, W.T.R.R. Survey.

Gray County

Magnolia Petroleum Co.'s No. 1 E. R. Eakins, 330 feet north and east of the SW cor. of NW of Section 56, Block 25, H.&G.N. Survey. Parker and others' No. 1 Mrs. M. Parker, 990 feet south and west of NE cor. of the south 360 acres of the E. N. Lynch Survey No. 9.

Hutchinson County

Friedman and others' No. 1 J. Q. Bost, 330 feet north and east of SW cor. of Section 9 ,Block Y-2, T.T.R.R. Survey.

Wheeler County

Angus and others' No. 1 T. E. Trostle, C of NE of NW of Section 90, Block 17, H.&G.N. Survey. Chapman & Morgan's No. 1 Otis Hatcher, 330 feet south and east of NW cor. of SW of SE of Section 63, Block 17, H.&G.N. Survey. Hatcher and others' No. 3 J. Hatcher, C of SW of SW of Section 80, Block 23, H.&G.N. Survey. Wisch Kamper's No. 1 I. Close-Gooch, 330 feet south and 200 feet west of NE cor. of SE of Section 81, Block 23, H.&G.N. Survey. Wisch Kamper's No. 1 H. G. Young-Brown, C of NW of NE of Section 55, Block 23, H.&G.N. Survey.

Cottle County

The Exploration Co.'s No. 4 Matador Land & Cattle Co., C of Section 46, John K. Stephens Survey.

NORTH CENTRAL TEXAS

Archer County

Barnsdall Oil Co.'s No. 5 T. B. Wilson-A, 150 feet north and 900 feet west of the SE cor. of their 200-acre lease "A" out of the Ben Howard Survey, A-179. R. I. Carter's No. 4 J. R. Parkey-B, 150 feet south and east of NW cor. of NE of NE of Section 11, Block 3, H.&G.N. Survey. F. P. Cullum and others' No. 2 Nora Mankins and others, 450 feet south and 629 feet west of NE cor. of NE of NW of Section 1, S.P.R.R. Survey, A-427. Fain-McGaha Oil Corp.'s No. 1 Parrish Brothers, 150 feet north and west of SE cor. of Lot No. 3, Section 98, A.T.N.C.L. Survey. Fain-McGaha Oil Corp. and Humble Oil & Refining Co.'s No. 5 L. F. Wilson-C, 180 feet north and 450 feet west of SE cor. of Lot No. 27, Wilson's Geraldine Subdivision.

Fain-McGaha Oil Corp. and United Producers Co.'s No. 8 L. F. Wilson-B, 150 feet south and 744 feet east of NW cor. of Lot No. 20, Wilson's Geraldine Subdivision. F. H. Gohlke and others' No. 5 L. F. Wilson, 150 feet north and east of SW cor. of Lot No. 250, Geraldine Subdivision. D. O. Johnson and others' No. 5 L. F. Wilson-B, 796 feet north and 450 feet west of SE cor. of Lot No. 19, Wilson's Geraldine Subdivision. Petroleum Producers Co. and others No. 3 L. F. Wilson-E, 150 feet north and 750 feet east of SW cor. of Lot No. 13, Wilson's Geraldine Subdivision.

C. P. Sheldon's No. 1 S. T. Jones, 150 feet north and 195 feet west of SE cor. of the northeast 40 acres of the S. T. Jones 160-acre tract out of the F. F. Rodemeyer Survey, A-361. Simms Oil Co.'s No. 22 J. H. Turbeville-A, 150 feet north and 339 feet west of SE cor. of Section 173, Robert Carson Survey. Same company's No. 23 J. H. Turbeville-A, 150 feet north and 639 feet west of SE cor. of Section 173, Robert Carson Survey. The Texas Company's No. 1 W. M. Coleman, 2,158 feet north and 2,232 feet west of SE cor. of Section 80, A.T.N.C.L. Survey.

Whittaker and others' No. 1 T. F. Hunter, 150 feet north and east of SW cor. of the east 40 acres of the McKinney and Williams Survey No. 18, A-310. F. C. Grebin and others' No. 1 E. Alexander and others, 150 feet north and east of SW cor. of SE of Section 22, G. P. Meade Subdivision, L. M. Pasture. C. B. Land and others' No. 1 John Conner, 150 feet south and east of NW cor. of the south 50 acres of the east 100 acres of the John Conner 316.5-acre tract out of the J. Tomlinson Survey, A-452.

Marland and Consolidated Oil Co.'s No. 1 H. L. and J. F. Ward-B, 150 feet south and east of NW cor. of SW of Section 1,387, T.E.&L. Wayne King and others' No. 1 S. Wilson, 150 feet north and 1,048 feet west of SE cor. of Section 1, B.B.B.&C. Survey, A-37.

Baylor County

W. H. Heinzerling and others' No. 1 G. E. Blackman, midway north and south and 150 feet west of the east line of Section 28, Block 3, H.&T.C. Survey.

Brown County

Baily-Michael & Love's No. 1 W. F. Lawson, 150 feet north and east of SW cor. of the L. G. R. King Survey, A-1,556. Cen-Tex Refining Co.'s No. 1 H. L. Allcorn-B, 150 feet north and 175 feet west of the SE cor. of the south 31 acres of the north 63.5 acres of the H. L. Allcorn 110-acre tract out of the Roland Honeycutt Survey No. 623. Cranfill & Reynolds' No. 2 J. B. Eubanks, 2,820 feet south and 150 feet west of NE cor. of the J. B. Eubanks 1,278-acre tract out of the Robert Mitchell Survey No. 141. Same company's No. 3 J. B. Eubanks, 2,520 feet south and 450 feet west of NE cor. of the J. B. Eubanks 1,278-acre tract out of the Robert Mitchell Survey No. 141.

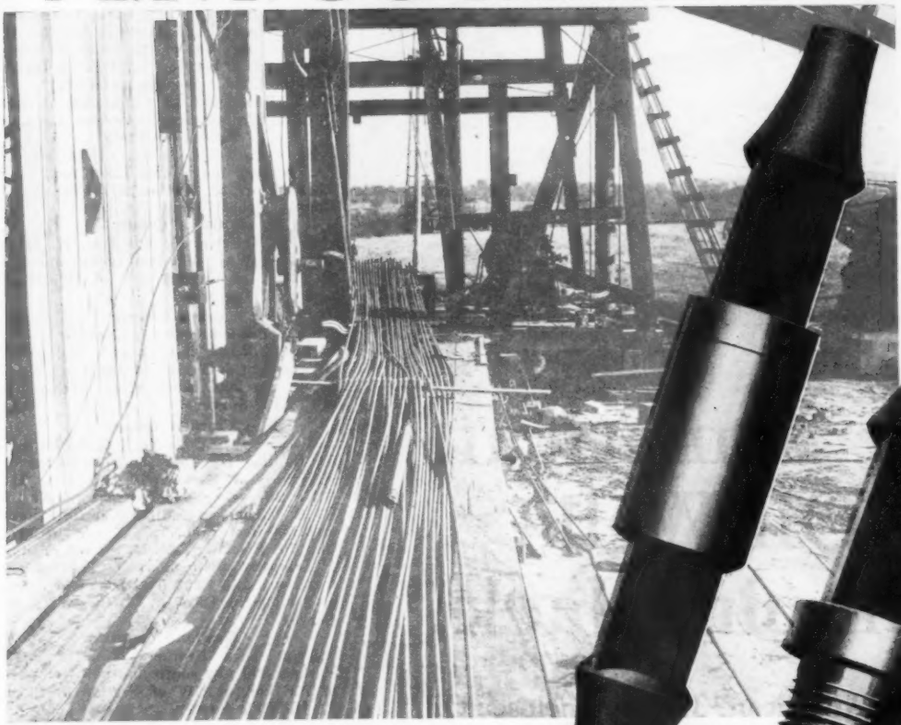
Cranfill & Reynolds' No. 1 O. L. Kellar-A, 2,700 feet south and 165 feet east of NE cor. of the J. B. Eubanks 1,278-acre tract and located on the O. L. Kellar 120-acre tract out of the Robert Mitchell Survey No. 141. Same company's No. 2 J. W. Newton-A, 750 feet south and 1,050 feet west of NE cor. of Lot No. 10, J. W. Newton Subdivision, Roland Honeycutt Survey No. 623.

Gilman & McMurray's No. 3 R. Hickman-A, 190 feet north and 150 feet west of the SE cor. of their 26-acre tract out of the R. Hickman 914-acre tract of the Thomas Benson Survey No. 783. Henshaw Oil Corp.'s No. 1 J. L. Cross, 3,800 feet south and 1,375 feet east of the NW cor. of the James Kinney Survey No. 624, being 150 feet south and east of NW cor. of their 34.5-acre lease. Humble Oil & Refining Co.'s No. 1 N. E. Munsette, 150 feet north and west of SE cor. cor. of the W. Ahrenbeck & Brother Survey No. 3, A-20. M. L. Richards' No. 6 A. L. Curry, 150 feet south and 450 feet east of NW cor. of the E. L. Betts Survey, A-70.

Robert Keen's No. 1 A. Armstrong, 500 feet north and 150 feet west of SE cor. of the east 100 acres of the west 260 acres of the A. Armstrong 640-acre tract out of the H.&G.N. Survey No. 1, A-1,217. Shadbolt & Creighton's No. 1 G. T. Butler, 150 feet north and east of SW cor. of the east 30 acres of the north 60 acres of the west 110 acres of the G. T. Butler 300-acre tract out of the John McGloin Survey No. 798, A-1,499. L. D. Slaton and others' No. 1 C. A. Gordon, 750 feet north and 150 feet west of SE cor. of the southwest 100 acres of the C. A. Gordon 476.75-acre tract out of the William Patton Survey No. 25, A-752. Van Bibber and others' No. 1 I. C. Mullins, 150 feet north and west of SE cor. of the J. C. Mullins Survey.

Calcasieu Oil Co.'s No. 1 Mrs. M. Newsom, 2,905 feet northwest of the southeast line and 1,195 feet northeast of the southwest line of the Chauncey West Survey No. 291 and located on the Mrs. M. Newsom 160-acre tract. E. H. and F. M. Caldwell's No. 1 E. H. Caldwell, 1,090 feet north and 975 feet west of SE cor. of the E. H. Caldwell 164-acre tract out of Section 15, Kerr County School Land Nos. 277 and 279, Inland Oil Co.'s No. 2 M. L. Cleveland, 1,305 feet northwest of the southeast line and 1,145 feet southwest of the northwest line of the M. L. Cleveland 346-acre tract out of the Henry Kraber Survey No. 19. Vandiver and others' No. 1 John Guyer, 450 feet south and 600 feet east of NW

JONES A.P.I. SUCKER RODS



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The new high manganese Jones Sucker Rod, successor to a long line of high quality sucker rods manufactured by the world's oldest sucker rod specialists, has the greatest margin of safety—the longest life, the highest resistance to wear of any sucker rod made. Jones Sucker Rod performance in all oil fields prove the dependability and superiority of this better Sucker Rod. Perfectly forged box and pin eliminates 50% of the joints in the ordinary string.

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cor. of the John Guyer 160-acre tract out of Section 22, H.T.&B. Survey.

Callahan County

Bridwell & Heydrick's No. 1 R. B. Stewart, 200 feet south and 1,200 feet east of NW cor. of SE of Section 20, Bayland Orphan Asylum Land. Homer Peeples' No. 1 H. W. Ross, 150 feet north and east of SW cor. of NE of Section 94, B B B.&C. Survey.

E. B. Richard's No. 1 R. J. Harris, 150 feet north and west of SE cor. of the west 45 acres of the south 90 acres of the NE of Section 42, Deaf & Dumb Asylum Land. Sterling Oil Co.'s No. 1 W. T. Wheeler, C of NE of NE of Section 25, Deaf & Dumb Asylum Land.

Coleman County

Syndicate Oil Co.'s No. 1 J. Z. Miller, Jr., 40 feet north and 1,380 feet west of SE cor. of Section 37, Fort Bend County School Land No. 224.

Cooke County

J. C. McFarland's No. 4 M. K. & T. Right of Way, 560 feet north and 700 feet west of the SE cor. of Block 89, town of Muenster.

Crane County

Gulf Production Co.'s No. 50 J. T. McElroy, 2,102 feet south and 1,980 feet east of NW cor. of their lease out of Section 200, Block F, C.C.S.D.&R.G. N.G.R.R. Survey.

Crockett County

Grayburg Oil Co.'s No. 1 G. L. Thompson-Collins, 150 feet south and east of NW cor. of Section 70, Block 1, I.& G.N. Survey. Same company's No. 2 G. L. Thompson-Collins, 330 feet south and 500 feet east of NW cor. of Section 70, Block 1, I.&G.N. Survey. Young & Donnelly's No. 1 J. S. Todd, 2,590 feet south and 1,250 feet east of NW cor. of Section 26, Block WX, G.C.&S.F.R.R. Survey.

Eastland County

Tripplehorn Brothers' No. 1 J. D. Parker, 300 feet south and 999 feet west of NE cor. of SW of Section 6, Block 1, H.&T.C. Survey.

El Paso County

Sillix and others' No. 1 W. D. Malone, 9,000 feet southwest of the northeast line and 1,000 feet northwest of the southeast line of Section 46, James M. Day Survey.

Glasscock County

World Oil Co.'s No. 2 L. S. McDowell, 330 feet north and 1,650 feet east of SW cor. of Section 32, Block 34, Township-2-South, T.&P.R.R. Survey.

Haskell County

A. Edmiston's No. 2 Reynolds Cattle Co., 150 feet south and east of NW cor. of Section 4, D. E. Brock Survey, A-15.

Howard County

Pure Oil Co.'s No. 4 Otis Chalk, 1,700 feet north and 300 feet west of SE cor. of Section 125, Block 29, W.&N.W. R.R. Survey. Sun Oil Co.'s No. 2 W. R. Settles, 990 feet north and 330 feet west of SE cor. of Section 135, Block 29, W.&N.W.R.R. Survey. Texon Oil & Land Co. and Marland Oil Co.'s No. 3 W. R. Settles, C of NE of Section 160, Block 29, W.&N.W.R.R. Survey.

Montague County

Continental Oil Co.'s No. 9 M. H. Salmon, 1,470 feet south and 917 feet west of the most easterly northeast corner of their 120-acre lease out of the W. P. Zuber Survey, A-887. Oil Operators Trust Co.'s No. 9 E. J. Bouldin, 150 feet south and 821 feet west of the NE cor. of their 24.4 acre lease out of the C. Chacon Survey, A-140. Same company's No. 10 E. J. Bouldin, 150 feet south and 1,121 feet west of NE cor. of their 24.4-acre lease out of the C. Chacon Survey, A-140. Pure Oil Co.'s No. 8 J. W. Maddox-A, 150 feet north and 450 feet west of SE cor. of their 33.6-acre lease "A" out of the S. H. Arnold Survey, A-5.

Palo Pinto County

Bullington-Lee and others' No. 1 J. H. Wester, 150 feet south and 722 feet east of NW cor. of the J. H. Wester 100-acre tract out of the John T. Smith Survey.

Pecos County

McMan Oil & Gas Co.'s No. 2 M. A. Smith, 624 feet north and 330 feet east of SW cor. of Section 104, Block 194, G.C.&S.F. Survey.

Runnels County

Agnew & Shields' No. 1 R. R. Russell, 500 feet northeast of the southwest line and 864 feet northwest of the southeast line of the Mrs. H. Hollien Survey No. 13½.

Upton County

Humble Oil & Refining Co.'s No. 8 R. Ricker, 3,850 feet northwest of the southeast line and 3,150 feet southwest of the northeast line of the Mary S. Denton Survey No. 5, A-127.

Shackelford County

C. H. Helf's No. 1 W. A. Williams, 150 feet north and 1,652 feet east of the NW cor. of Section 4, Block 10, E.T.R.R. Survey and located in the A. Y. Williams Survey. Lewis Production Co.'s No. 1 J. A. Matthews, 2,020 feet south and 1,000 feet east of the NW cor. of Section 55, Block 10, E.T.R.R. Survey. Tannehill Oil Co.'s No. 1 J. B. Matthews, Section 33, 150 feet south and west of NE cor. of Section 33, Block 10, E.T.R.R. Survey.

Stephens County

Corzelius Brothers & Taggert's No. 1 J. E. Chesley, 660 feet south and west of NE cor. of the R. A. Pace Survey No. 48. Leiser & Snebold's No. 1 W. M. Guest, 800 feet north and 250 feet west of SE cor. of NW of Section 41, Block 6, T.&P.R.R. Survey. Texas Pacific Coal & Oil Co.'s No. 74 Charles Binney, 2,500 feet north and 900 feet east of SW cor. of Section 76, Block 4, T.&P.R.R. Survey.

Wichita County

T. Lomax and others' No. 3 J. M. McCormick and others, 250 feet south and 150 feet west of the NE cor. of Section 6, Pa'o Pinto County School Land, A-241. Bridwell & Mayfield's No. 2 T. O. Womack, 150 feet south and 450 feet west of NE cor. of Section 2, G.C.&S.F.R.R. Survey, A-796. Bullington-Pendleton & Lee's No. 1 A. F. Fassett, 1,470 feet south and 1,170 feet east of NW cor. of Section 3, S.A.&M.G. Survey, A-267. Grayce Oil Co.'s No. 8 W. W. Overby, 150 feet north and 1,350 feet east of SW cor. of the W. W. Overby 238.1-acre tract out of the H. B. Balch Survey, A-12.

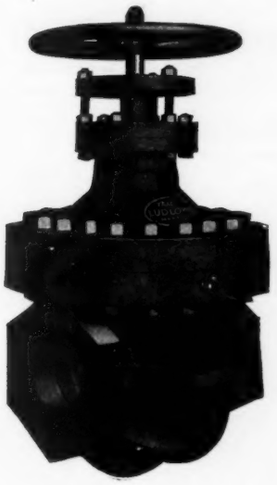
W. H. Hammon and others' No. 7 S. H. McCarty-C, 450 feet south and west of NE cor. of their "C" lease out of the W. R. Eaves Survey, A-447. Merrick Drilling Co. and others' No. 1 J. F. Boyd, 450 feet south and 550 feet east of NW cor. of Lot No. 12, J. T. Lewis Survey, A-462. The Texas Company's No. 1 Sue Mitchell, 736 feet north and 597 feet west of SE cor. of Lot No. 19, T. F. Mitchell Subdivision, and located in the P. Castleman Survey, A-36. Same company's No. 351 W. T. Waggoner, 1,270 feet north and 1,328 feet east of SW cor. of Section 2, Seale & Morris Survey, A-535. Same company's No. 352 W. T. Waggoner, 775 feet north and 652 feet west of SW cor. of Section 13, H.T.&B. Survey, A-137, and located in Section 148, H.&T.C. Survey, A-784. The Texas Company and others' No. 4 J. & T. J. Waggoner, 150 feet north and 2,648.6 feet west of SE cor. of the H. George Survey, A-454, being 150 feet north and 100 feet west of SE cor. of Lot No. 34.

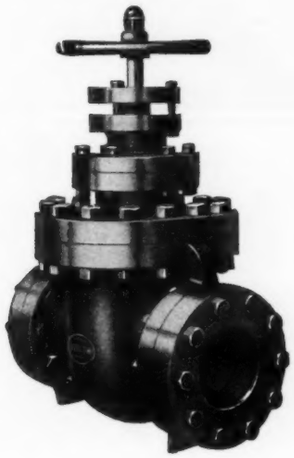
Wharger County

Barkley & Meadows' No. 4 W. T. Waggoner-A, 205 feet south and 660 feet west of NE cor. of SE of SW of Section 24, Block 4, H.&T.C. Survey. Consolidated Oil Co. and others' No. 1 B. H. Parker and others, 2,490 feet south and 210 feet east of NW cor. of Section 6, Block 3, H.&T.C. Survey. Cosden & Co., Inc.'s No. 20 W. T. Waggoner-B, 2,515 feet south and 150 feet west of NE cor. of their "B" lease out of Section 31, Block 4, H.&T.C. Survey.

Fain-McGaha Oil Corp.'s No. 1 W. T. Waggoner-R, 150 feet north and east of SW cor. of SW of SE of Section 51, Block 4, H.&T.C. Survey. Same corporation's No. 2 W. T. Waggoner-S, 150 feet south and east of NW cor. of NW of NE of Section 24, Block 4, H.&T.C. Survey. Phillips Petroleum Co.'s No. 1 W. T. Waggoner-Brady, 200 feet south

"WORTH ITS WEIGHT IN GOLD"





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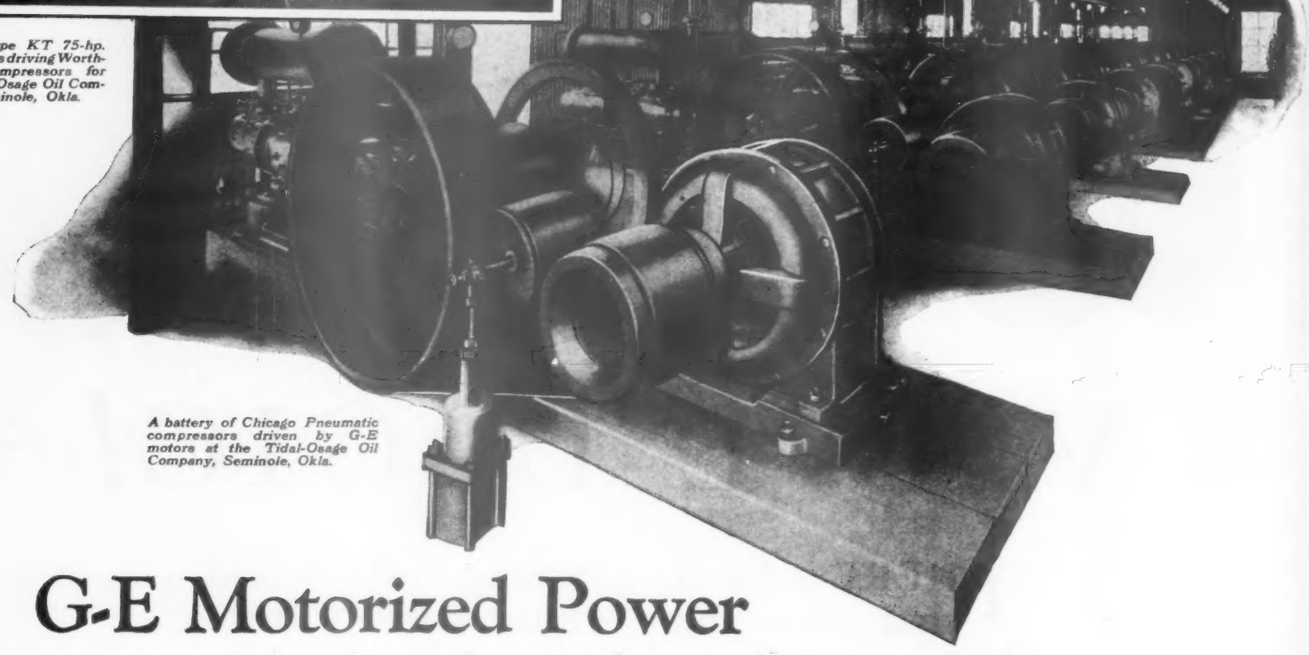

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200-151

GENERAL ELECTRIC

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and 150 feet west of NE cor. of NW of SE of Section 30, Block 4, H.&T.C. Survey. Same company's No. 8 W. T. Waggoner-L, 300 feet north and east of SW cor. of SE of SE of Section 45, Block 4, H.&T.C. Survey. Same company's No. 8 W. T. Waggoner-HH, 200 feet south and 265 feet west of NE cor. of their "HH" lease out of Section 42, Block 4, H.&T.C. Survey. Shaw Oil Co.'s No. 1 W. T. Waggoner, 150 feet south and west of NE cor. of N half of NE of SW of Section 30, Block 4, H.&T.C. Survey.

The Texas Company's No. 353 W. T. Waggoner, 170 feet north and 2,810 feet east of SW cor. of Section 33, Block 4, H.&T.C. Survey. Same company's No. 3 W. T. Waggoner-C, 150 feet north and 508 feet east of SW cor. of NW of SW of Section 24, Block 4, H.&T.C. Survey. Same company's No. 4 W. T. Waggoner-C, 150 feet north and 811 feet east of SW cor. of NW of SW of Section 24, H.&T.C. Survey. Same company's No. 5 W. T. Waggoner-C, 150 feet north and 1,114 feet east of SW cor. of NW of SW of Section 24, Block 4, H.&T.C. Survey. Same company's No. 4 W. T. Waggoner-E, 205 feet south and 1,114 feet east of NW cor. of Section 24, Block 4, H.&T.C.R.R. Survey, being 205 feet south and west of NE cor. of their "E" lease. Tower & McKanna's No. 1 W. T. Waggoner-B, 150 feet south and west of NE cor. of SW of SW of Section 32, Block 4, H.&T.C. Survey. Waggoner Refining Co.'s No. 5 W. T. Waggoner-F, 200 feet south and west of NE cor. of SE of SE of Section 25, Block 4, H.&T.C. Survey.

Winkler County

Atlantic Oil Producing Co. and J. D. Collett's No. 5 T. G. Hendrick-F, 2,200 feet south and 990 feet east of NW cor. of Section 40, Block 26, School Land. Same company's No. 6 T. G. Hendrick-F, 2,200 feet south and 1,650 feet east of NW cor. of Section 40, Block 26, School Land. Gulf Production Co.'s No. 16 T. G. Hendrick, Tract-C, 330 feet south and east of NW cor. of Section 40, Block B-5, School Land. Same company's No. 17 T. G. Hendrick, Tract-C, 440 feet north and west of SE cor. of NE of Section 45, Block 26, School Land. Humble Oil & Refining Co.'s No. 2 T. G. Hendrick-C, 1,650 feet north and 330 feet west of SE cor. of Section 32, Block 26, School Land. Same company's No. 3 T. G. Hendrick-C, 990 feet south and 330 feet west of NE cor. of Section 32, Block 26, School Land. Same company's No. 4 T. G. Hendrick-C, 2,310 feet south and 330 feet west of NE cor. of Section 32, Block 26, School Land.

Landreth Production Corp. and others' No. 1 E. W. Cowden-A, 330 feet south and east of NW cor. of Section 3, Block B-12, School Land. Same corporation's No. 2 T. G. Hendrick-B, 2,200 feet south and 990 feet west of NE cor. of Section 40, Block 26, School Land. Same corporation's No. 1 T. G. Hendrick-C, 2,200 feet north and 990 feet east of SW cor. of Section 40, Block 26, School Land. Same corporation's No. 1 T. G. Hendrick-D, 2,200 feet north and 990 feet west of SE cor. of Section 40, Block 26, School Land. Marland Oil Co.'s No. 4 T. G. Hendrick, 1,650 feet north and east of SW cor. of Section 33, Block 26, School Land. Same company's No. 5 T. G. Hendrick, 2,310 feet north and 1,650 feet east of SW cor. of Section 33, Block 26, School Land. Same company's No. 6 T. G. Hendrick, 2,310 feet north and east of SW cor. of Section 33, Block 26, School Land.

Prairie Oil & Gas Co.'s No. 1 T. G. Hendrick, 450 feet south and 330 feet east of NW cor. of E half of SW of Section 40, Block 26, School Land. Pure Oil Co.'s No. 2 Grisham-Hunter-C, 330 feet north and 2,310 feet west of SE cor. of Section 45, Block 26, School Land. Roxana Petroleum Corp.'s No. 6 Ida Hendrick-B, 330 feet north and west of SE cor. of Section 29, Block B-5, School Land.

Southern Crude Oil Purchasing Co.'s No. 3 T. G. Hendrick, T-67-3-B, 2,310 feet north and 990 feet east of the SW cor. of Section 33, Block 26, School Land. Same company's No. 5 T. G. Hendrick, T-88-M, 330 feet north and 990 feet west of SE cor. of Section 33, Block 26, School Land. Same company's No. 6 T. G. Hendrick, T-88-M, 2,310 feet south and 990 feet east of NW cor. of Section 33, Block 26, School Land. Same company's No. 7 T. G. Hendrick, T-88-M, 1,485 feet south and 1,650 feet west of NE cor. of Section 33, Block 26, School Land.

Young County

Allday Oil Corp. and Carter's No. 8 J. B. McKinley, 750 feet north and 150 feet west of SE cor. of Section 1,489, T.E.&L. Survey. Atlantic Oil Producing Co. and Casey's No. 1 M. L. Brainard, 150 feet north and west of SE cor. of the west 116 acres of the north 216 acres of Section 1,926, T.E.&L. Survey. Amerada Petroleum Corp.'s No. 3 R. J. Johnson, 1,700 feet north and 900 feet east of SW cor. of Section 2,948, T.E.&L. Survey. Same corporation's No. 4 R. J. Johnson, 2,700 feet north and 2,500 feet east of SE cor. of Section 2,948, T.E.&L. Survey, and located in the D. Pennington Survey, A-241.

P. Bowen's No. 1 L. C. Brooks, 150 feet north and 450 feet east of SW cor. of the south 100 acres of the east 200 acres of Section 637, T.E.&L. Survey. Bullington-Lee & Pendleton's No. 1 J. L. Boone, 150 feet south and east of NW cor. of NE of NW of Section 1, B.B.B. &C. Survey, A-34. C. Kleiner and others' No. 3 B. Hawkins, 750 feet south and 1,470 feet west of NE cor. of Section 1,914, T.E.&L. Survey. C. Kleiner and others' No. 6 C. W. Langston, 1,050 feet south and 450 feet west of NE cor. of the S half of Section 1,490, T. E.&L. Survey.

S. Kruger and others' No. 1 J. G. Johnson, 150 feet north and west of SE cor. of west 50 acres of the north 100 acres of Section 1,495, T.E.&L. Survey. J. Leath and R. Dillard's No. 1 M. A. Hoffman, 1,886 feet southwest of the northeast line and 150 feet southeast of the northwest line of the J. Poitevent Survey, A-2. Reed & Wootten's No. 1 G. W. Poole, 150 feet south and east of NW cor. of the south 20 acres of the west 100 acres of Section 2,404, T.E.&L. Survey.

E. R. Riggs and others' No. 4 J. B. McKinley, 150 feet north and 450 feet west of SE cor. of the west 200 acres of Section 1,489, T.E.&L. Survey. Shappell Oil Co.'s No. 6 C. W. Johnson, 750 feet north and 450 feet east of SW cor. of the E. W. Sergeant Survey, A-253. Same company's No. 1 C. W. Johnson, 150 feet north and west of SE cor. of the west 40 acres of the south 200 acres of the C. W. Johnson 1,026-acre tract out of the E. W. Sergeant Survey, A-253.

Shaw-Riggs and others' No. 3 J. B. McKinley, 150 feet south and east of SW cor. of the north 40 acres of the east 65 acres of Section 1,489, T.E.&L. Survey. The Texas Company's No. 1 H. L. Leberman, 2,018 feet north and 874 feet west of SE cor. of Section 221, T.E.&L. Survey. Whitehill Oil Corp.'s No. 1 W. R. Drum, 72 feet south and 150 feet east of NW cor. of the J. W. Paddock Survey, A-1,625.

Wise & Jackson's No. 1 C. F. Rowley, 750 feet south and 1,050 feet east of NW cor. of Section 191, T.E.&L. Survey. Amerada Petroleum Corp.'s No. 1 John H. Cochran, 600 feet north and 2,200 feet east of SW cor. of the D. Pennington Survey, A-241. Same corporation's No. 2 R. J. Johnson, 300 feet south and 150 feet west of NE cor. of Section 2,949, T.E.&L. Survey.

Corrected Locations

In Brown County: Cranfill & Reynolds' No. 1 J. B. Eubanks, 2,520 feet south and 150 feet west of NE cor. of the J. B. Eubanks 1,278-acre tract out of the Robert Mitchell Survey No. 141.

In Clay County: L. C. Hirvick and others' No. 2 William H. Meyers, 5,541 feet south and 4,169 feet east of NW cor. of the C. Thompson Survey, A-444.

In Wilbarger County: Harry Hines and others' No. 1 F. L. Carter, 2,100 feet north and 1,157 feet west of the SW cor. of Section 2, Block 7, H.&T.C. Survey and located in Section 35, Block 6, H.&T.C. Survey. Staley-Wynne &

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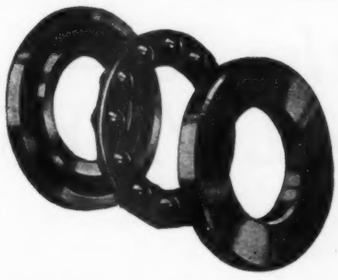

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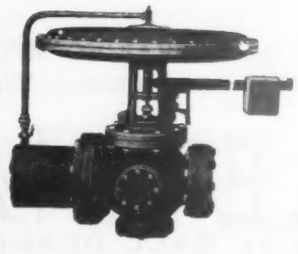

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Co.'s No. 1 W. T. Waggoner-C, 205 feet north and 1,115 feet east of SW cor. of Section 7, Block 17, H.&T.C. Survey. Tower & McKanna's No. 3 W. T. Waggoner, 200 feet north and 150 feet west of SE cor. of SW of NE of Section 30, Block 4, H.&T.C. Survey.

DRILLING CONFERENCE FOR COTTON VALLEY

SHREVEPORT, La., Apr. 23. — Development of big production in a new lower horizon in Cotton Valley, and heavy gas pressure along with it, necessitating different methods, etc., as to casings, cementing, etc., Cotton Valley operators met with the director of the minerals division of the Conservation Department here to prepare a new set of regulations covering the new situation, with avoidance of a repetition of Pine Island deep pay experience particularly in view. Only one new regulation was promulgated as a result of this conference, but at least two other items are under consideration by a committee of operators and by the legal committee of the Louisiana-Arkansas division of the Mid Continent Oil and Gas Association.

This one regulation had to do with setting the second string and requires that it be set not higher than 3,500 feet in order to cut off the series of water sands in the Blossom sand. The department proposed another regulation requiring that the third, or pay, string be set not higher than 4,300 feet in order to comply with a State law requiring separation of producing horizons—in other words prohibiting any one well producing from two horizons at the same time. The operators, however, argued that the upper gas (4,300 feet) is seepage from the new lower pay and that both are in the same formation — the Trinity—and that for this reason wells in the Trinity do not come under this provision.

There was considerable discussion on this point which finally wound up in the operators winning their contention that it should be left to their discretion where to set the third string, particularly in view of the well-known fact that each well is a case in itself and no hard and fast rule can fit all wells in the same pool or the same horizon.

Sizes and weights of casings to be used came in for their share of attention but the only regulation adopted was that the pipe must have a factor of safety of not less than two for whatever depth at which it may be set. The department suggested for the new Cotton Valley wells the same cementing requirements it suggested for the high pressure Richland Parish wells, jacketing each string to the surface, but as in the case of the Richland conference finally came down to a regulation requiring each string to be jacketed well up in the preceding string. In the case of Cotton Valley 4,600-foot wells, 600 feet up the preceding string was made a minimum for cementing the third string, this minimum being sufficient to jacket it through the water in the Blossom. When it came to surface fittings, 3,000 pounds test was adopted as the standard, affording a considerable margin of safety. Extension stems on master gates also will be made a general practice.

As a means of conserving the gas present with oil in the new pay for the sake of prolonging the natural flow of the wells, it was suggested by the department that the wells be produced through tubing from the beginning but this brought up so much argument pro and con that a committee of operators was appointed to study the matter before any recommendations or regulations are set up. It was felt on both sides that with only one well producing from the new horizon there is not sufficient information available on which to base any such recommendations or regulations. However, Magnolia Petroleum Co. has two wells due for completion within two weeks or so, and E. D. Holcomb, division superintendent, agreed to try out the California system as a means of determining what results may be expected and the operators committee was forthwith appointed to study this and other problems affecting the new situation. This committee, with W. F. Chisholm, director of the minerals division of the department as chairman, is composed of R. D. Holcomb, J. S. Hassan, Ohio Oil Co.; F. A. Rice, Humble Oil & Refining Co.; B. M. Nowery, Palmer Corp., and A. W. Peake, Dixie Oil Co. Mr. Peake is a recent arrival in this division of the Mid-Continent, succeeding Mrs. N. M. Hancock as vice president of the Dixie, and has had considerable experience in just such problems in the California fields. He will be a member of the committee in an advisory capacity.

Spacing of wells in the new pay brought up complications and no action was taken except to refer the matter to the legal committee of the Mid-Continent Association. It was suggested that one well to 40 acres be adopted, but existence of more or less numerous small tracts and conflicting interests of royalty owners as well as landowners, presented such a tangle that the operators shied at undertaking establishment of any agreement or regulation until the legal committee could study the situation and make its recommendations.

The department did not hesitate to inform the operators that it intends doing whatever it can to prevent a repetition of the waste of gas in development of the Trinity in Pine Island, but at the same time is not disposed to impose any onerous regulation in the case of the Cotton Valley pay. Reference also was made to the probability of more oil and gas legislation by the fothcoming assembly which convenes in May, the idea being that if the operators themselves would impose certain methods and requirements it would probably prevent drastic legislation.

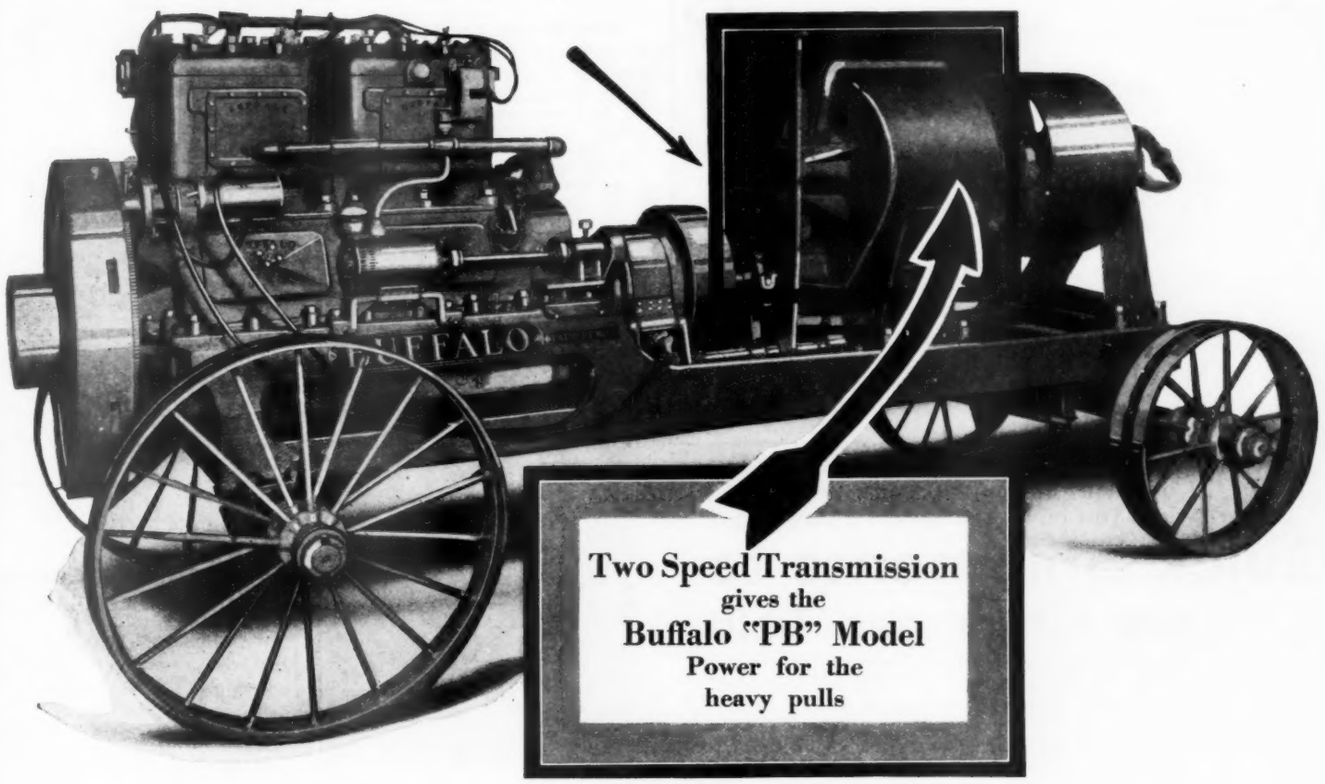
GEOLOGISTS REVIEW WEGENER HYPOTHESIS

In "Theory of Continental Drift" the American Association of Petroleum Geologists has presented a volume of 240 pages containing a symposium on the origin and movement of land masses, both intercontinental and intracontinental, as proposed by Alfred Wegener.

The comprehensive character of the book may be recognized from the list of contributors and their subjects: "The Problem of Continental Drift," W. A. J. M. van Waterschoot van der Gracht; "Continental Drift," Bailey Willis; "Some of the Objections to Wegener's Theory," Rollin T. Chamberlin; "Continental Movement," John Joly; "Wegener's Continental Drift," G. A. F. Molengraaf; "Wegener's Hypothesis," J. W. Gregory; "Two Notes Concerning My Theory of Continental Draft," Alfred Wegener; "The Hypothesis of Continental Displacement," Charles Schuchert; "Some Physical Tests of the Displacement Hypothesis," Chester R. Longwell; "Sliding Continents and Tidal and Rotational Forces," Frank Bursley Taylor; "Comments on the Wegener Hypothesis," William Bowie; "Discussion of Floating Continents," David White; "Discussion of Wegener Theory," Joseph T. Singewald, Jr.; "Comments on the Wegener Hypothesis," Edward W. Berry; "Remarks Regarding the Papers Offered by the Other Contributors to the Symposium," W. A. J. M. van Waterschoot van der Gracht.

Among interesting features of Wegener's theory is that the separated continents of today, when moved together, working on a globe, fit against one another as do the pieces of a jigsaw puzzle. He holds that the continental blocks "underwent great horizontal drifting movements in the course of geologic time and these presumably continue even today. The drifting probably began in Paleozoic time, but it was not until the middle Jurassic that Australia-Anarctica began to separate and drift southeast. In the early Cretaceous the Americas began to drift westward and finally in the Pleistocene Greenland-Newfoundland was separated from Norway and Great Britain."

The book is published by the American Association of Petroleum Geologists, Tulsa.



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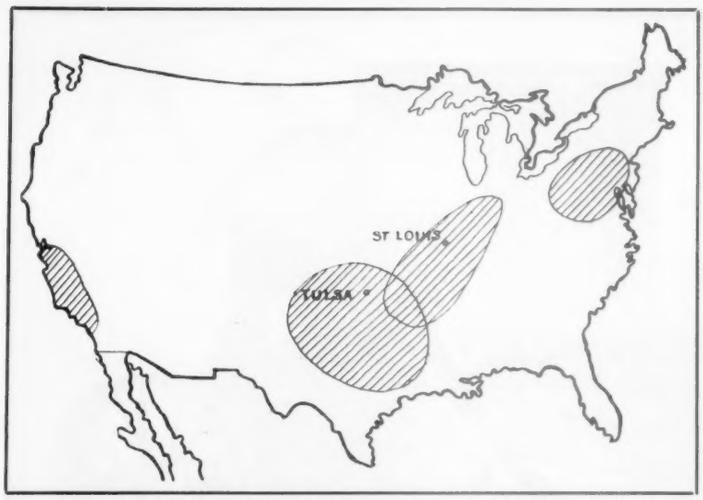

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CLEM S. CLARKE NAMED SHREVEPORT POSTMASTER

SHREVEPORT, La., Apr. 24. — Clem S. Clarke, son of the late C. K. Clarke, who was president of the Standard Oil Co. of Louisiana, has been appointed acting postmaster at Shreveport, La., succeeding C. W. Page, democratic incumbent, who died suddenly three weeks ago, and assumed his duties April 2.

Mr. Clarke, who is only 30 years old, is the youngest postmaster Shreveport ever has had, and had the endorsement of the entire Republican organization in

Clem Clarke

Louisiana. He is district manager for the Halliburton Oil Well Cementing Co. in North Louisiana, Arkansas and East Texas, and president and manager of the American Drilling Co. of Shreveport.

He was born in Marietta, Ohio, but has lived in Shreveport for 18 years, the family moving here when his father came here to be superintendent of pipe lines for the Standard Oil Co. in the early days of the Caddo Field. He was educated in the Shreveport public schools and got his mechanical engineer's degree at Cornell. During the war he held a commission in the Navy and served throughout the period of hostilities and still holds a commission as lieutenant, junior grade, in the United States Naval Reserve.

IS THE REFINING INDUSTRY HELPLESS?

(Continued from Page 162)

lean over backward, and have deliberately refrained from taking any steps to prevent ruinous and wasteful cut throat competition. If so, it is hoped their legal departments will look into what other industries have done and are now doing, apparently with the approval of the Government, and in the long run in the best interests both of the public and of the industry.

Going back to the title of this paper, "No, the industry is not helpless in the present situation."

PLAN FOR PROSPECTING COON CREEK DEPOSIT

SHREVEPORT, La., Apr. 21.—Business men of Henderson, Tenn., a short distance southeast of Memphis and north of the northeast Mississippi development, have organized and fully financed the Chester County Oil Co. which will prospect the Coon Creek area for oil and gas. H. D. Easton, of Shreveport, who located the Amory, Miss., gas discovery well, has recently completed a survey of the Henderson area and worked out several favorable structures, most of which have been leased by the Henderson company.

The Henderson area is interesting to geologists because of the near-by classic deposit of Ripley (Nacatoch) fossils. United States Geological Survey Professional Paper 137 by Bruce Wade is a description of this (Coon Creek) deposit in which he found over 350 species, the specimens for the most part being in a state of almost perfect preservation. The deposit was discovered by a farmer who was digging a well, and one of the best specimens found is one of Baculites grandis in possession of Mr. Easton.

Officers of the Chester County Oil Co. are J. I. Galbraith, president; Dr. W. O. Baird, vice president; H. A. Morgan, secretary; R. E. McCallum, treasurer; other members of the board being J. F. O'Neal, J. G. Hardeman, R. C. Lykins, W. C. Farrow and J. T. Harwell, business men of Henderson, who organized the corporation.

North of Memphis, between Jackson and Humbolt, there has been considerable leasing recently, but for whom has not been learned. Several years ago a well was drilled about half way between the two towns and it is around this old location that blocking is going on. Land close to it is drawing rentals and bonus, but farther away land owners are putting in their land for just sufficient to guarantee the deal or donating it on a royalty basis.

ASTONISHING PROGRESS IN VENEZUELAN FIELD

WASHINGTON, D. C., Apr. 21.—The 1927 development of the petroleum resources of the Maracaibo Basin in Venezuela shows astonishing progress, although drilling and construction programs of the three large operating companies were greatly restricted during the larger part of the year, says Consul Alexander K. Sloan. Pools which promised commercial value were discovered and the boundaries of all fields were widely extended.

The large operating companies increased their tanker fleets to allow them to transport a daily average of 199,902 bbls. in 1927 which was 950,000 bbls. in excess of the daily average for the previous year. Such an increase was made in transportation facilities that in 1927, a total of 55,605,431 bbls. was shipped from the basin, showing an increase of 22,000,000 bbls. over 1926.

In April, 1927, the three large companies were contemplating a shut down in the oil fields for lack of tankers to export the oil and for lack of storage to care for it. That condition brought about a reduction of the output by an agreement which allowed the companies to limit construction to necessary work. This condition did not prevent considerable drilling in 1927 in wildcat locations by all companies.

The production of oil in 1927 in the Maracaibo Basin totaled 62,817,008 bbls., an increase of more than 70 per cent over the previous year

NEW ARKANSAS BASE MAP

SHREVEPORT, La., Apr. 21.—A base map showing location of all oil, gas and dry holes drilled in Arkansas since the permit system was adopted by the State Conservation Department in March, 1923, has been completed by the Arkansas Geological Survey and Department of Conservation and Inspection. It measures 7 reet by 8 feet, is drawn to scale of 3 miles to the inch and is printed in two sections. Copies are obtainable from the state geologists. The negative has been sent here in order that W. C. Spooner, assistant state geologist, may spot all wells drilled before creation of the Arkansas conservation department.

G. C. Branner, state geologist, is compiling data and starting work on a new topographic map of the state to be published in a few months as a co-operative state and federal publication. The United States Geological Survey will do the technical work and the State will pay for the map. It will show details of elevations, coast geodetic and geological surveys, etc., and will be drawn to the scale of 6 miles to the inch.

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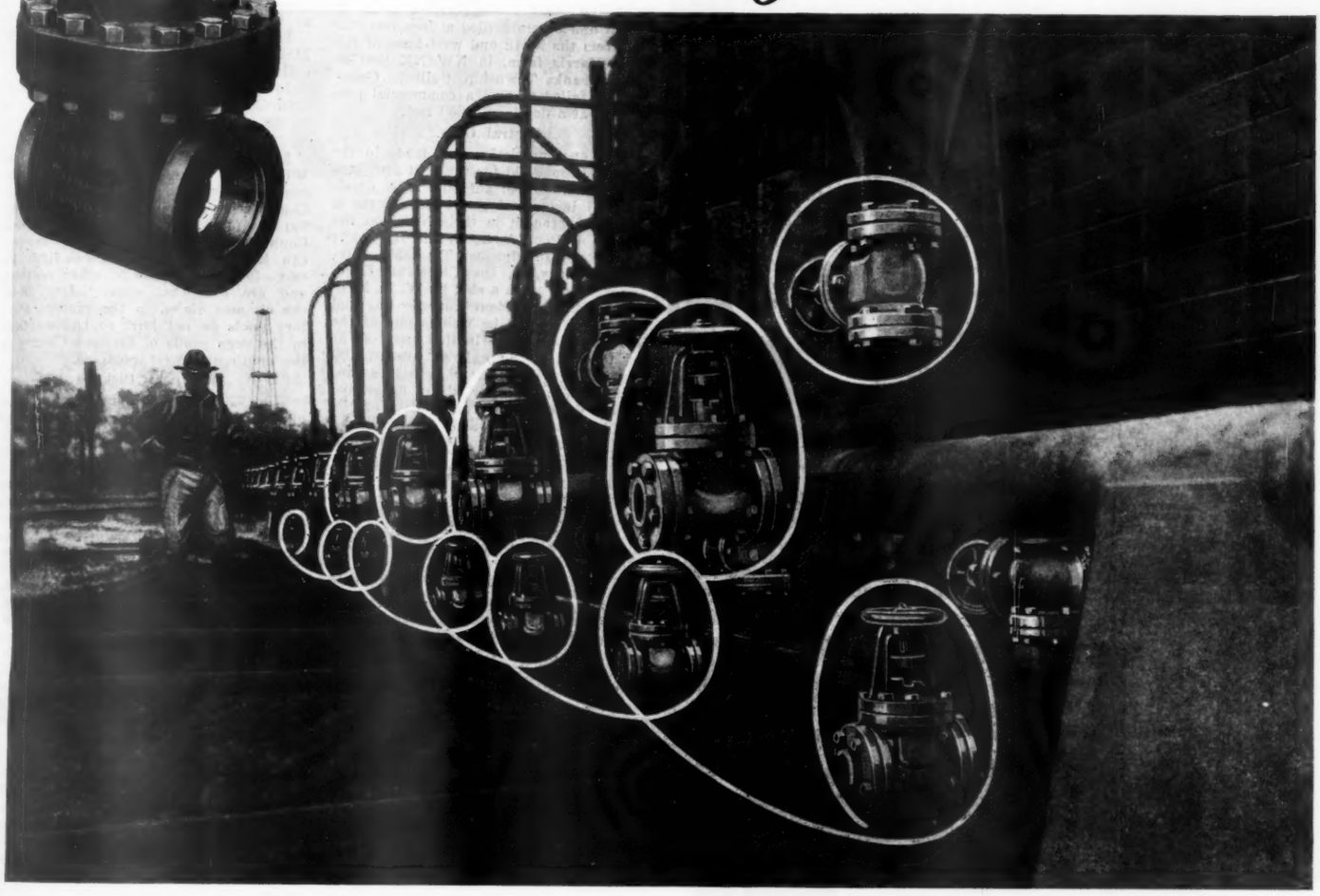

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CENTRAL WEST FIELDS

(Continued from Page 64)

farm, in NE Section 19, Washington Township, Gibson County. This well found top of sand at 1,664 feet and when only 8 feet in the sand showed a natural initial production of 70 bbls. Other tests are planned on adjoining leases as soon as material can be handled and delivered to locations.

Miller, Davis and others' No. 4 well, 400 feet from the north line and 600 feet from the west line of the James S. Wilson farm, in NW Section 13, Logan Township, Pike County, drilled in a dry hole at a depth of 1,428 feet.

Hill and others drilled a deep test 660 feet from the north and west lines of the F. J. Harris farm, in NW NE Section 35, Fairbanks Township, Sullivan County, and failed to find a commercial production at a depth of 2,600 feet.

Central Ohio

Only one completion was made in the Central Ohio Field for the past few days and it is an important one, as it developed oil instead of gas when Reever & Laubshier brought in their No. 1 on the Charles J Pond farm, on the Butternut Ridge Road, in Olmstead Township, Cuyahoga County, in the Cleveland Field. The well was given a shot by W. H. Ziegler of the Independent Torpedo Co., and the owners claim the well is one of the best found anywhere in that part of the county, and estimate it at around 100 bbls initial. In case it is as large as announced it will bring about an active drilling campaign in the vicinity of the test, in fact if it develops into a 25-bbl. well, it means much for the surrounding territory.

Just at this time the best wells being found anywhere east of the Mississippi River are located in Harrison Township, Perry County, Ohio, the oil being found in the Clinton sand and expensive to develop.

Illinois Field

The only completion in Illinois was made by the Densmore Oil Co. in No. 11 on the Charles Everette Henry farm, in Oblong Township, Crawford County, although it is really a freak find as it developed quite a volume of gas at a shallow depth of 350 feet, but has considerable water which will be pumped off and the gas made use of. The gas was found in the water sand.

KENTUCKY-TENNESSEE

(Continued from Page 64)

J. M. Meredith and others' second test on the Kelley heirs' 65 acres showed an initial production of 50 bbls. at a depth of 434 feet. S. H. Russell and others' No. 6 on the A. P. Kelley farm in the same pool, was reported dry at 699 feet.

In the Sunnydale Field, same county, the Boston-Southwestern Oil Co.'s No. 7 Mary E. Wilson farm produced 50 bbls. at 402 feet.

In the Midkiff Pool, J. T. Hare & Son's No. 3 on the W. B. Howard 16 acres, had an initial production of 5 bbls. at 360 feet.

George Randolph has abandoned his test on the Taylor farm, in Ohio County, located 1½ miles of the well being drilled by Fred Hartman and others on the Johnny Atherton farm, close to the Ohio-McLean County line.

Barnard-Reil Oil Co. has concluded that its test on the J. W. Whitehouse farm, 2½ miles southeast of Maxwell, in Ohio County, is a bad location and will stop drilling it and abandon the hole.

Trico Oil & Gas Co.'s No. 5 on the Gilbert Jolly farm, in the Gilbert Jolly Pool, west of Buford in the western part of Ohio County, is showing for a 35-bbl. producer, as was the case with the other wells on the farm. This is directly west several miles from the Rich Ambrose Pool.

Chenault & Brooks are drilling a test on the P. R. Kelley farm, at Friendship Church, east of production. Thompson and Connor are working at a test on the Gil Farmer farm, near the hamlet of Adaburg.

Daviess County

Miller & Damron's No. 1 on the Alvey Tyler farm, an offset to the Brown farm discovery well, in Browns Valley, near Utica, is reported good for better than 100 bbls.

Fred Estes and others' No. 1 on the Massie Brothers farm, also in Daviess County, is among the duster list.

Other Completions

In the Bowling Green Field, in Warren County, Norris & Hayse's No. 5 E. Morgan farm, pumped 6 bbls. at 531 feet, and the A. B. T. Oil Co.'s No. 4 James Deathridge farm was a dry hole at 1,058 feet.

Lang, Smith and others' No. 1 C. M. McBride farm, near Pellville, in Hancock County, was dry at 706 feet.

In Calhoun County, Edward Murray drilled what shows for a dry hole in a test on the Len Mitchell farm.

After Shallow Sands

More activity is being shown in the Whitesville, Deanfield and Pellville sections in Daviess, Ohio and Hancock Counties since a good many failures were found in the deep sand area of Daviess County. Wells in the former sections can be drilled for about one-fifth the cost of the deep ones in other sections, and are somewhat surer. Dry holes, the oil men claim, in the eastern territory pools do not hurt so bad as those in the deep sands of Daviess County in the south and west portions.

Kentucky Pickups

The Illinois Pipe Line Co. made a quick connection to the good well drilled by Leeper, Noe and others on the Mahloskey farm, in the Utica Pool, in Daviess County. The well when only 2 feet in the sand made a big showing and two 100-bbl. tanks were rushed up and within 24 hours the connection was made and oil going through the line. This well flowed at the rate of 10 bbls. an hour, putting it in the class of the well on the Hayden farm and the one on the Brown farm, both in Daviess County, but all three some distance apart. The well flowed natural and like the Brown well was not given a shot. A 250-bbl. tank has also been rushed up to care for the production of the well in case it drills itself into a large producer. The second well is on the Mahloskey lease and surrounding this lease several more wells are starting.

Unknown parties are starting a test on the Lewis May farm, about a mile south of the well on the Lewis farm, to the southwest of Boston, near Hickory School and not far from the good well recently found by Coomes and McMahon on the C. M. Jones farm. Rogers and others are delayed by a fishing job at a test on the Rev. C. F. Hartford farm, a mile north of the Jones well; and three-quarters of a mile north of the Lewis well and on the north side of the highway passing through Philpot and Boston. This well got its fishing job at a depth of 722 feet, or about 55 feet above where the Lewis well got its good pay.

Hupp, Duff and others' No. 2 on the Len Sparks farm, near Red Mill, Daviess County, found a 5-foot vein of the Jett sand, with a light showing of oil, but will continue going down to the Barlow sand, and if that sand does not show encouraging enough the upper or Jett sand will be given a shot in hopes of making a commercial producer of it.

Fred Kennedy is starting an important test on the Lonnie Cooper farm, to the north of Whitesville, Daviess County, and northwest about a mile from the Berry School. The outcome of this well will be watched with much interest, and if oil is found a well will be drilled at once on the B. W. Barret farm in the same vicinity.

Chenault & Brooks are drilling a wildcat well on the P. R. Kelly farm, at Friendship Church, southeast of Deanfield, Ohio County, and on Rural Route No. 1, Fordsville. This is shallow territory where the sands will be found from 450 to 600 feet from the surface. Thompson & Connor are drilling a test

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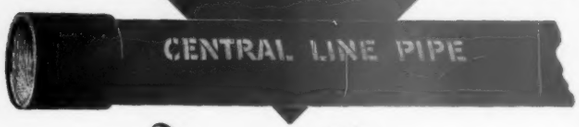

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on the Gil Farmer 100-acres, near the village of Adaburg, also in Ohio County and some distance in advance of production in shallow territory.

The past couple of weeks saw the unloading of several drilling rigs at Owensboro that will soon be transported to locations for new wells.

A gas volume of 2,000,000 feet was found in the Cumberland Petroleum Co.'s test on the R. H. Neeley farm, 10 miles south of Owensboro, in Daviess County, at a depth of 1,250 feet, and it is drilling deeper with indications for the finding of an oil well. This company recently drilled a dry hole on the Salmon farm, close to the Neeley farm.

Robert N. Palmer and others have started a well on the Truman Hoover farm, 1¾ miles east of the five producing wells on the Gilbert Jolly farm, west of Buford and in the western and northern part of Ohio County. E. G. Henderson is doing the contract work.

M. F. Whitehill, E. E. Ricks, with Lang & Smith, purchased the Ambrose and Wilbur King lease of 131 acres, in the Bell's Run, northwest of the Ambrose Pool, in Ohio County, from Clarence A. Leeper and will begin developing it shortly. This lease has a 7-bbl. producer in the center of the farm. The deal was made on payment of production basis.

Col. Bob Powers bought a block of acreage in the vicinity of Birk City, in Daviess County, and close to where the Bartoletti-Meaney Development Co. is drilling on the old Charles Birk farm, of 80 acres, now owned by Dr. T. B. Saunders, in the east part of the county near the Hancock County line.

The test of C. H. Tremor and others on the Jasper Lloyd farm, east of Maxwell, in Ohio County, is reported to have what is a nice showing of oil at a depth of 1,250 feet.

Leeper Oil Co. is drilling No. 4 on the W. L. Barnett 50 acres, in Daviess County. Ohio Oil Co.'s No. 2 Lawrence Roby 87 acres, same county, is showing for a light pumper after being given a shot.

Southeast of the Ambrose Pool, not far from Mt. Moriah Church, the Cumberland Petroleum Co.'s No. 7 on the Bob Hamilton, north 176 acres, and Daley and Lowman's No. 3 on the south 100 acres of the Bob Hamilton farm, are reported showing around 100 bb's. each. These wells are in Ohio County.

Indications are that C. H. Tremor and others' No. 1 on the Jasper Lloyd farm, east of Maxwell, in the western part of Ohio, will be a duster.

James C. Ellis's No. 4 on the Bob Keith farm, near the Hamilton wells, is showing for 100 bbls. initial production, but may prove larger or slightly under that production. Mecca Oil Co.'s No. 13, on the Cora Wells 130 acres, in the western part of the Ambrose Pool, same county, is showing for a good producer with No. 14 near the sand.

Dug Bolling's No. 3 on the Hazel Miller-Aud farm, north of the Mattingly lease and three-quarters of a mile north of the John Roby production, is reported making an excellent showing in 40 feet of sand which was tapped at 505 feet.

Miller & Damron's No. 1, on the J. W. (Dutch) Tompkins farm, in the Brown Pool, of Daviess County, near Utica, is making an excellent showing.

TENNESSEE

Tennessee once more comes to the front with a large producer found in an altogether different and lower formation than in previous operations. This is H. Z. Clark's No. 1 on the K. Thurman farm, in the Peterman Bend Pool, which was drilled to a depth of 300 feet below the Pencil Cave, a total depth of 654 feet, where the well flowed 240 bbls. the first 24 hours, and is so far the best producer found in the Peterman Bend area for a long time and has spurred the operators to further testing of this new pay sand.

The Clark-Hill Oil Corp., in the same pool and a mile east of Celina, started to make a deep test of No. 1 on the Stone farm, in view of going down to the 1,400-foot sand to test lower possibilities for oil. The well had a nice showing at 200 feet below the Pencil Cave, and when drilled 100 feet deeper entered the Modoc sand and got a well that is holding at around 50 bbls. daily and maintaining its production far above the average well. These two wells are in a true oil sand and these recent discoveries have started a lot of new work and definitely proves that Tennessee has the bigger wells in the deeper stratas.

W. M. S. Hughes is drilling his No. 1 W. J. Nevins farm about four locations from the two deep wells just completed and this well is now down close to 400 feet, and will in all probability extend this pool to the northeast. Kraft and MacDonald are drilling a deep test on their J. W. Arms lease. H. Z. Clark and Frank Bovard are going deeper with No. 2 on the Tidwell heirs farm and found a nice showing at 500 feet and are still drilling.

Cumberland Valley Oil Co., of Hopkinsville, Ky., is drilling around 500 feet at their second well on the Barlow Langford farm, on Mill Creek, in Clay County. No. 1, on this farm, is holding at close to 10 bb's. daily.

Coe and others have opened a new pool on Kettles Creek, in the northern part of Clay County, by bringing in No. 1, on the John Overstreet farm. This well is 4 miles in advance of production and has filled one 250-bbl. tank flowing by heads, and possibly is good for 25 bbls.

In the same county, H. L. Ogle and others' No. 1, on the Mrs. Wilburn farm, is reported a duster, as is Ackerman and others' No. 1 on the Francis Langford farm, at a depth of 550 feet. The Hughes-Rife Syndicate's No. 1 on the Kyle farm got a light showing in the upper sand but is now down close to 850 feet and is going down for the deeper sand that is supposed to exist at around 1,350 to 1,400 feet.

In the Peterman Bend Pool, J. S. Aber lost the hole at No. 1 on the J. B. Gates farm, and skidded the rig and started a new hole.

On Asburn Creek, Clay County, the Carnahan Oil Co.'s No. 1, on the Kimes farm, was completed at 643 feet and good for an initial of 50 bbls. On the same stream, Reeser & Edwards' No. 1 on the Sanford Stamps farm, is flowing 30 bbls. a day without agitation. There are now three tanks full of oil on this lease, and the Paragon Development Co. is connecting up the lease to its gathering line. No. 2 on the Stamps farm is drilling.

In the Fox Springs Pool, in Clay County, the Ava Oil & Gas Co.'s No. 5 on the Mary Williams farm is a big gas well. There are four oil producing wells on the farm, with a daily production of 260 bbls., according to reports.

R. C. Henderson, representing Los Angeles, Calif., capital has been in Clay County, with headquarters at Celina for the past week and has secured some valuable close in leases together with the Mart Rich producing property on Mill Creek and will shortly begin drilling several wells.

Jackson County

Blick and Blick, better known as the Celina Oil Co., completed another well in the Hawkins Pool east of Gainsboro, in Jackson County; this is the tenth straight producer, and is estimated good for 100 bbls. This well is on the Rad Hawkins farm. No. 11 is starting up.

The Tinslay's Bottom Pool, in Jackson County, owned by the Dafoe Brothers of Bowling Green, Ky., and the discovery pool of Jackson County, has been sold to some Illinois and Terra Haute, Ind., parties, and the new owners plan an extensive drilling campaign to commence immediately. This was a wonder pool at one time and a large production was procured, but dwindled rapidly. Reports are that most of the operations done were on the edges and the heart of the pool had not been punctured by the drill, so something worth while should be looked for.

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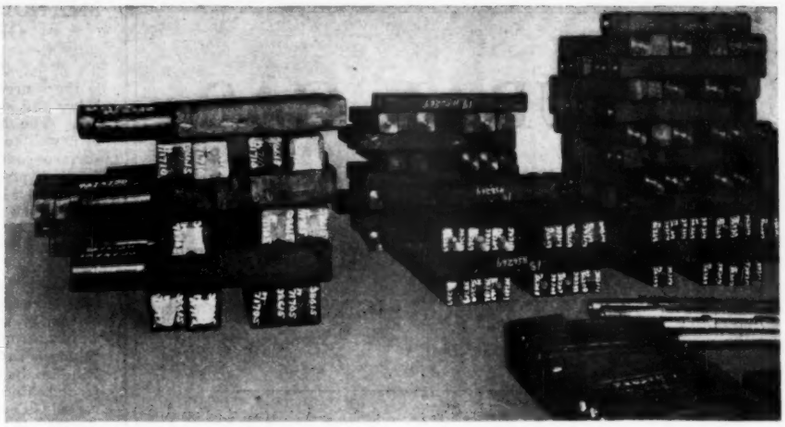

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METHODS OF SHUTTING OFF BOTTOM WATER

(Continued from Page 92)

is the source of water instead of a point below the shutoff.

5. The drilling and production history of a well to be cemented and of the subsurface conditions of the area involved, so that proper weight can be given to the various factors before making recommendations as to where a plug should be placed.

Preparation of a Well

Whenever the bottom of a well is to be cemented through a perforated liner it is first necessary to condition properly the bottom by washing thoroughly with clear water through tubing. A plain joint of tubing is sometimes used for this purpose. Fine casings can frequently be washed from behind the liner by running an inverted Guiberson swab on the tubing with a short nipple and plug in the end. Circulation should be maintained until the results indicate that the well is clean.

In a well finished with a liner having a small mesh, the liner should be pulled and the cement placed in the bottom of the open hole unless the operator prefers to perforate the pipe. In the latter case a ripper or a four-way perforator can be used.

Some operators prefer to take the chance of cementing through the liner rather than in the open hole, because of the extra expense involved in rigging up the tools to clean out and bail. In cementing with the liner in the well the circulation of water through tubing must be depended upon to clean the hole and wash all sand and cavings, if any, from behind the liner before cementing. If the liner is removed, the open hole caves badly, especially if the casing is set high, and this makes it difficult and sometimes extremely dangerous to clean out, properly place the cement, and reset the liner. It is very doubtful whether successful jobs can be obtained in a hole that is caving before and during the cementing operation, even though continuous circulation is maintained. Although pulling the liner may result in a more expensive job, it offers a better and more satisfactory means of conditioning the hole, and it is believed that in the majority of cases the additional expense is more than offset by the increased effectiveness of the cementing operation.

Any well made special oil-well cement can be used, providing it is fresh. The cement should be mixed with not to exceed 45 pounds, or approximately 5½ gallons, of water to each sack of cement. The final mixture should have as thick a consistency as the pump will readily handle, and it should be mixed thoroughly and smoothly with mortar hose, avoiding lumps.

If an accelerating compound is used it should be added last, and proper allowance made when mixing for the additional amount of fluid. In handling cement the two controlling factors are time and proper consistency of mixture.

In cementing with a liner in the hole, the amount of cement required to give a proper height of plug should be carefully calculated, as it is not always possible to wash out excess cement after it has once run behind the liner.

Cementing Procedure

The important steps in cementing are outlined as follows:

1. Arrange the surface equipment as shown in Plate 1. The suction from the pumps to the cement box should be not less than 3 inches and preferably 4 inches in diameter.

2. Examine the tubing used to see that it is free from split joints, leaks and bad couplings. Omit the use of a tubing catcher during cementing operations. Cement is likely to settle and set around a tubing catcher and cause trouble.

3. Determine the depth of the well accurately by the use of a steel line, a measure meter, or a line measurement.

4. Cut a pole about 4 feet in length with a diameter one-half inch less than the inside diameter of the tubing through which the cement is to be pumped. Securely nail a washer, cut out of belting, on each end of this pole and see that the washers fit snugly in the tubing. (See Figure C, Plate 1.)

5. Pack off the tubing ring and tighten the set screws in the casinghead. Be sure that the opening in the tubing ring is large enough for a tubing collar to pass through. (See Figure B, Plate 1.)

6. Tie one end of the rotary hose to the standpipe and the other end to the tubing or the elevators. This is done as a matter of safety in the event that the hose should be blown from its connections.

7. Tighten the bull ropes so that the tubing can be raised at the proper time without delay, thus reducing the danger of cementing the tubing in the hole.

8. Pack off the tubing with wet cement sacks below the spider, as shown in Figure B, Plate 1, and test out the packing and connections with a pressure of 400 to 500 pounds. Two wet cement sacks folded lengthwise once and wrapped around the tubing like a bandage, one on top of the other, will serve to pack off between the tubing and tubing ring very effectively. These sacks should be tied with soft rope.

9. Use a short joint of tubing at the top of the string, if necessary, so that the wooden plug can be introduced from the floor while the tubing is on bottom.

10. Remove the plug from the 2½-inch tee in the top of the tubing and introduce the wooden plug. Do not screw the 2½-inch iron plug back into the tee until all fluid in the pump and rotary hose has been pumped out ahead of the cement.

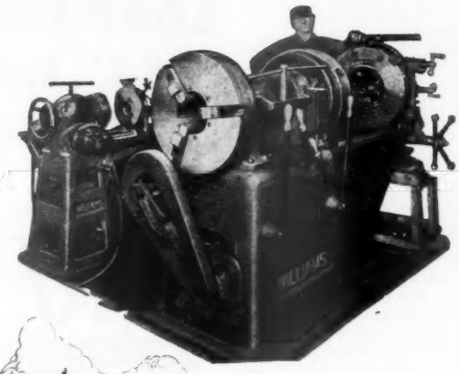
11. When the cement reaches the top of the tubing, screw the 2½-inch iron plug back into the tee, raise the tubing 1 foot from bottom (see Position A, Figure 1, Plate 2) and pump the cement on top of the wooden plug. The wooden plug is used chiefly as an indicator to show when the cement reaches bottom. The plug should hit bottom in 6 to 10 minutes in a 3,000-foot hole if a 10 by 4½ by 10 pump is used with a full head of steam, and a 4-inch suction from the cement box to the pump. When the plug hits bottom it will stop the pump immediately and the effect will also be registered on the pressure gauge. At this point shut off the pump and raise the tubing just high enough above the bottom of the hole to allow the plug to pass out. (See Position B, Figure 2, Plate 2.) Ordinarily the weight of the cement on top of the wooden plug is sufficient to push the plug out, but it is sometimes necessary to start the pump and permit it to make a few strokes to force the cement out the tubing. In either case there will be a sudden overflow of fluid at the casinghead caused by the cement running out of the tubing. This sudden overflow indicates that the cement is out of the tubing. As soon as the cement reaches bottom, raise the tubing to a point 4 feet higher than the top of the desired plug (see Position C, Figure 3, Plate 2), pack off at the casinghead with wet cement sacks (see Figure B, Plate 2), and close the relief gate. Maintain a pressure of about 400 pounds for three minutes, then open the relief gate sufficiently to cause free circulation and maintain a pressure of about 250 pounds for a period of at least six hours. Always keep a full head of steam on the pump while maintaining circulation, and regulate the pressure of 250 pounds by means of the relief gate at the casinghead.

Experience has shown that by circulating under a pressure of 250 pounds with the bottom of the tubing raised to 4 feet above the desired top, the plug can be cut within narrow limits of the intended point.

Under the above conditions the returns containing the excess cement should begin to appear in about 1 hour and 30 minutes from the time that circulation under pressure began, if the hole is about 3,000 feet in depth. The amount of excess cement will determine the length of time that it will take for the returns to clear up again.

In the event that the steam should give out or pump break down while circulating under pressure, the tubing should be immediately raised to a point well above the cement.

After circulation under pressure has



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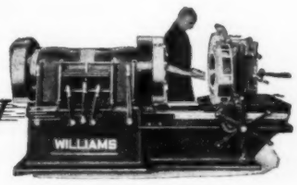

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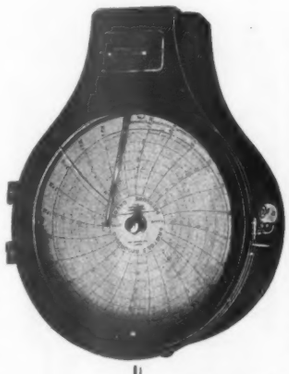

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been maintained for at least six hours, the tubing should be pulled in the clear and no further work done in the well for a period of 72 hours.

After the cement has set 72 hours, the tubing is lowered and the top of the plug located. If the plug is found to be at the desired point the well is ready for a production test.

A 50-horsepower firebox boiler carrying 120 pounds pressure will provide ample steam to handle a 10 by 4½ by 10 pump and build up the desired pressures, providing a short steam line is used and the boiler is housed or the weather is warm.

Cementing Without Circulation

The following outline is suggested for obtaining circulation in case returns are lost previous to cementing and it does not appear practical to continue pumping water into the hole. If the well is tubed and ready to cement, pump in through the tubing two or three well-soaked cement sacks, or cotton seed, sawdust or any other material at hand that offers a possibility of clogging up the porous formation.

The following description is given of a method successfully used in building up a plug where it was not possible to obtain returns:

The well was rigged up as usual with the exception of the cement box, which was placed so that the cement could be dumped into the tubing after pushing the wooden plug down with a rod. A swivel was used instead of the usual tee and iron plug, so that the tubing could be quickly screwed together after the cement had been dumped and the plug pumped to bottom. As soon as the plug hit bottom the tubing was raised in the clear without packing off and applying pressure. The amount of cement used should not exceed the amount calculated to fill the hole to the desired point, after assuming that the hole is drilled to gauge and free from cavities. It is not possible to place the top of a plug accurately under these conditions.

This method at times may have certain advantage over the use of the dump bailer, in that the desired amount of cement can be placed in one operation.

The advantages in favor of cement are that it can be drilled out or built up at a nominal cost, and can be used either in perforated pipe or open hole.

Conclusions

The major conclusions drawn from the study of the Wortham Field will be briefly stated here in order to call attention to what the writers believe of interest and importance to the many operators:

1. The apparent bearing that the depth of completion of a well has upon the initial production and subsequent water problem is evident from the production curves. Wells completed immediately above the water contact in general have the highest initial production, and show water in large quantities at an early date.

Wells completed some distance above the water contact are of smaller initial production, but are not menaced with serious water encroachment for a considerably longer period.

2. That the rapid drilling of a field with the consequent development of an enormous flush production usually results in the sale of the product on a declining market, which may materially reduce the profit of the producer.

3. That close spacing of wells results in a high percentage recovery, which in its own light is of marked economic importance.

If the figures presented in the report are assumed to be a correct estimate of the original content of the reservoir, the recovery of 52 per cent, which seems quite probable, is a material increase over what has in general been accepted as the recovery from other producing fields.

4. The lack of core records, particularly of the pay zone, is evident.

If coring had been done, in even moderate amounts, the results of the plugging and repair work later found necessary would have been greatly improved.

5. That as a general proposition bottom-hole plugging has been decidedly successful.

6. That more care should be exercised

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in the obtaining and preserving of both formation and production records.

7. That the plugging of a well is a subject that must be carefully analyzed before work is commenced. The well can be damaged if due care is not exercised.

8. That the sooner a well is repaired after the appearance of water, the greater are the benefits to be derived from the work.

9. That no well should be considered as impossible of repair until reasonable evidence of failure is obtained.

STOCKS OF CRUDE OIL IN SHREVEPORT AREA

SHREVEPORT, La., Apr. 23.—Stocks of crude oil in the various pools of the Shreveport division as of April 1 show an increase of 164,724 bbls. over the amount in storage March 1. Stocks as of April 1 amounted to 28,303,283 bbls. compared to 28,138,529 bbls. as of March 1. Practically all of the increase, or 208,838 bbls., was accumulated in Arkansas where stocks of El Dorado light oils showed an increase of 251,388 bbls. against which Smackover shows a decline of 37,322 bbls. and Nevada County a decline of 5,228 bbls. Louisiana stocks as a whole were off 7,114 bbls., though Homer and Haynesville crude both showed big increases while Caddo light fell off 252,496 bbls.

Both steel and earthen storage show an increase, though the light oils gained more than twice as much as the heavier grades less subject to evaporation losses, and this in spite of refiners in the division charging more oil to stills in March than during February. On the other hand shipment of light oils from the division have been restricted to a smaller average than at any time in the last several years due to the Oklahoma and West Texas floods.

Stocks of Arkansas oil in steel increased 117,093 bbls. and pits held 591,745 bbls. more April 1 than they had a month before. In Louisiana pools stocks in steel were 4,030 bbls. less than on March 1 and there was 3,084 bbls. less in pits. Smackover steel storage was off 143,247 bbls. and stocks in pits increased 105,925 bbls. El Dorado oil in steel increased 251,388 bbls. There are no open pits in this field. Nevada County stocks in steel increased 8,952 bbls. and pits held 14,180 bbls. less.

Bellevue stocks were 23,374 bbls. less than on March 1. Caddo steel storage held 212,412 bbls. less and pits (the only earthen storage in north Louisiana) held 40,084 bbls. less. Cotton Valley stocks were 84,326 bbls. under the March 1 total; DeSoto Parish, 161,154 bbls. less; Haynesville stocks increased 164,354 bbls. and Homer 320,775; Red River was stationary—a 499-bbl. increase—and Urania stocks were 8,392 bbls. under March 1 reserve.

North Louisiana	Steel	Earthen
Caddo	2,136,225	578,874
Cotton Valley	237,693	.....
Bellevue	196,665	.....
DeSoto	906,131	.....
Homer	3,648,953	.....
Haynesville	4,204,486	.....
Red River	31,279	.....
Urania	79,769	.....
Total	11,441,201	578,874
Total storage	12,020,075	
Arkansas		
El Dorado and Lisbon	2,149,032	.....
Nevada County	141,341	172,100
Smackover	7,104,274	6,716,461
Total	9,394,647	6,888,561
Total storage	16,283,208	
Both States	20,835,848	7,467,436
Total storage	28,303,283	
Total March 1	28,138,529	

HYDROGENATION PLANT WILL START IN FALL

The coal hydrogenation plant under construction at Meiderich, Germany, is expected to start operations in October or November with an annual output of about 30,000 metric tons. The Farben-industries plant is now operating at about this rate, but will be increased to about 140,000 tons at the end of the year. Tests have proved that all sorts of Ruhr coal can be used for hydrogenation with the exception of anthracite, but the different kinds of coal show different results in

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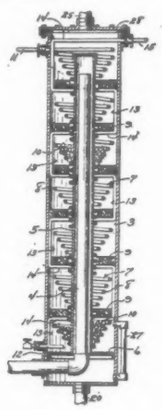
output of oil. On an average it is claimed that a metric ton of coal will produce 150 kilos of benzine, 100 kilos of middle oil suitable as fuel for Diesel motors and 80 kilos of lubricating oils. It is also claimed that coal of a value of 15 marks will produce oil to the value of 65 marks. This is the result of experiments with the Bergius-Billweiler process, whereas the I. G. Farbenindustrie A. G. uses a process of its own based on Bergius patents but considerably improved by the company's research. The Leuna also uses lignite instead coal. The hydrogen, always the most expensive factor, is being produced from cheap coke-oven gas.

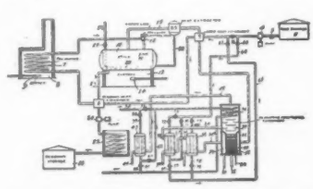
Recent Patents

1,664,237. Vapor Tower. Harry Ashley Wier, Dallas, Tex. Filed February 2, 1926. Serial No. 85,600. Four claims. (Cl. 196—139.)



1. In an apparatus for the purpose set forth, a vapor tower, means for directing vapor into the bottom of the tower, means in the tower for directing the vapor first in an upward direction therein, then in a downward direction, and then in a further upward direction to the top of the tower, means for subjecting the vapor in its last mentioned course, to a scrubbing and a catalytic action, means for filtering the vapor in its last mentioned course, means for subjecting the vapor to the action of a cooling agent in its last mentioned course and means for directing the purified vapor from the tower.

1,664,977. Art of Distilling Lubricating Oils. Richard W. Hanna, Piedmont, Calif., assignor, by mesne assignments, to Standard Oil Co. of California, San Francisco, Calif., a corporation of Delaware. Filed October 4, 1923. Serial No. 666,475. 3 Claims (Cl. 196—77.)



2. In the art of petroleum distillation, heating the oil to be distilled to a temperature at which portions thereof would crack if maintained at such temperature for a period of time sufficient to permit the cracking reaction to take place, while maintaining the same in substantially liquid phase, immediately passing the heated oil before substantial cracking thereof takes place to a vaporizing chamber, maintained under a reduced pressure less than atmospheric, wherein the temperature of the oil is dropped below the temperature at which portions would crack, extracting from the vapors the tarry "mist" without substantial scrubbing of vapors in said step, and thereafter fractionally condensing the vapors into a number of distillates of different boiling points.

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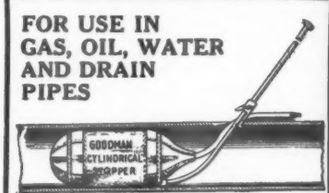
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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for February

	Month (bbls.)	Dy.av. (bbls.)
Prairie P. L. Co.*	4,147,000	143,000
Gulf P. L. Co.	1,147,934	39,584
Texas P. L. Co.	1,162,360	40,081
Magnolia Pet. Co.	2,037,671	70,265
Empire P. L. Co.	812,524	28,018
Cosden P. L. Co.	945,023	32,587
Shell P. L. Corp.	2,242,983	77,344
Sinclair P. L. Co.	2,320,000	80,000
Oklahoma P. L. Co.	2,866,758	98,854
Other lines	4,872,000	168,000
Total February	22,554,253	777,733
Total January	24,485,369	789,850
Difference	1,931,116	12,117

Shipments

Prairie P. L. Co.†	5,006,573	172,640
Gulf Pipe Line Co.	1,251,234	43,145
Texas Pipe Line Co.	1,079,832	37,236
Magnolia Pet. Co.	1,874,678	64,644
Empire Pipe Line Co.	884,780	30,510
Shell P. L. Corp.	2,232,677	76,988
Cosden P. L. Co.	743,003	25,621
Sinclair P. L. Co.†	2,508,161	86,488
Oklahoma P. L. Co.	2,741,401	94,531
Other lines	5,220,000	180,000
Total February	23,542,339	811,003
Total January	25,427,215	820,233
Difference	1,884,876	9,230

Stocks

Prairie Oil & Gas Co.*	33,500,000
Prairie Pipe Line Co.*	2,500,000
Gulf Pipe Line and Gypsy Oil Co.	10,219,658
The Texas Company	6,581,336
Magnolia Petroleum Co.	7,598,406
Empire Pipe Line Co.	4,262,149
Cosden Pipe Line Co.	2,633,367
Sinclair Crude Oil Pur Co.*	20,000,000
Oklahoma P. L. Co.	3,055,309
Carter Oil Co.	14,774,244
Other lines*	11,810,000
Total February	117,934,469
Total January	116,976,705
Difference	957,764

*Estimated. †Prairie Pipe Line shipments include Texas crude and Sinclair Pipe Line shipments include Wyoming and Texas crude.

Note—Stocks do not include approximately 7,500,000 bbls. of crude oil held in storage on private tank farms and leases and approximately 1,400,000 bbls. of Texas Panhandle crude in storage in Oklahoma and Kansas.

EASTERN PIPE LINE REPORT
Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Ken ucky and Indiana for February and March:

	Feb., '28	Mar., '28
Nat. Transit	150,792.56	170,381.24
S. W. P. P. L.	86,300.70	96,738.67
Eureka P. L.	358,514.02	395,925.46
Buckeye P. L. (Macksburg)	336,290.24	363,109.67
Buckeye P. L. (Cleve.)	10,650.78	11,122.25
Buckeye P. L. (Lima, etc.)	108,503.36	120,274.94
Indiana P. L.	6,980.90	6,526.96
Cumberland P. L.	216,913.65	221,081.93
N. Y. Transit	20,961.60	24,499.36
Tidewater P. L.	179,353.35	181,399.11
Pure Oil	64,170.62	67,517.94
Emery P. L.	54,952.72	57,577.93
Paragon Dev.	46,564.77	55,979.26
Stoll Oil Ref.	12,100.29	.....
Total	1,653,059.46	1,782,134.72
Daily average	57,002.05	57,488.22

Note—Indian Refining Co. also reported other receipts of 347,281.21 bbls. Paragon Refining Co. had other receipts of 197,794.28 bbls. Paragon Development had other receipts of 2,317.25 bbls.

Petroleum Deliveries

The following tables exhibi: the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for February and March.

	Feb., '28	Mar., '28
Nat. Transit	550,710.53	548,681.98
S. W. Pa. P. L.	300,851.13	438,196.09
Eureka P. L.	92,771.88	205,994.31
Buckeye P. L. (Macksburg)	134,030.96	158,473.81
Buckeye P. L. (Cleve.)	978.44	976.93
Buckeye P. L. (Lima, etc.)	1,301,510.04	960,869.54
Indiana P. L.	1,160,002.87	1,240,186.42
Cumberland P. L.	127,571.67	144,935.24
N. Y. Transit	149,006.80	145,403.04
Northern P. L.	163,752.84	176,203.73
Tidewater P. L.	143,951.23	194,170.85
Pure Oil	63,494.40	69,549.77
Emery P. L.	54,814.47	54,304.29
Paragon Ref.	167,179.39	193,052.03
Indian Ref.	307,199.80	358,460.97
Paragon Dev.	45,839.18	67,926.14
Total	4,853,665.43	4,956,385.14
Daily average	167,367.77	159,883.39

Gross Stocks

The gross stocks held by various pipe lines in the oil-producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of February and March:

	Feb., '28	Mar., '28
Nat. Transit	1,123,231.06	1,156,703.69
S. W. Pa. P. L.	756,131.52	656,661.49
Eukera P. L.	1,782,756.00	1,590,080.78
Buckeye P. L. (Macksburg)	424,216.38	413,024.91
Buckeye P. L. (Cleveland)	55,006.63	44,540.16
Buckeye P. L. (Lima, etc.)	4,763,213.91	4,776,826.13
Indiana P. L.	695,467.72	778,310.93
Cumberland P. L.	650,094.40	668,275.42
Southern P. L.	383,995.42	502,604.64
N. Y. Transit	808,998.76	921,342.77
Northern P. L.	537,565.25	531,081.55
Pure Oil	60,918.70	59,985.11
Emery P. L.	7,916.48	12,409.42
Paragon Refining	20,811.72	25,285.68
Indian Refining	10,031.11	11,874.10
Paragon Devel.	100,463.76	90,719.69
Total	12,180,418.82	12,239,725.47
Increase	96,290.94	59,306.65

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of February and March, showing the gross s.ocks of the above fields:

	Feb., '28	Mar., '28
Pennsylvania	3,821,514.45	3,755,332.90
Lima	762,432.37	836,291.60
Kentucky	1,049,761.11	1,059,426.47
Mid-Continent	6,460,176.74	6,539,436.81
Illinois	86,534.75	49,237.69
Total	12,180,418.82	12,239,725.47

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1925	1926	1927	1928
January	56,831	55,630	56,209	52,904
February	60,606	60,394	61,298	57,002
March	60,575	61,644	63,247	57,485
April	63,062	63,019	60,337	.....
May	59,217	60,580	60,284	.....
June	61,270	61,131	62,757	.....
July	62,639	63,206	58,674	.....
August	69,686	61,815	60,870	.....
September	62,510	64,639	60,285	.....
October	145,388	161,132	147,036	.....
November	59,350	61,774	57,275	.....
December	57,974	58,755	53,089	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1925	1926	1927	1928
January	157,889	156,056	141,227	146,465
February	160,863	159,488	138,534	167,368
March	154,591	150,239	133,777	159,883
April	151,429	152,371	140,227	.....
May	146,995	160,998	144,594	.....
June	149,467	160,257	149,772	.....
July	161,338	160,045	151,850	.....
August	161,730	151,929	188,653	.....
September	156,719	158,915	144,213	.....
October	145,388	161,132	147,036	.....
November	143,582	152,608	150,975	.....
December	150,162	136,428	144,504	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1926	1927	1928
January	9,859,170	9,718,008	12,276,710
February	9,579,354	10,119,162	12,180,419
March	9,438,292	10,794,044	12,239,725
April	9,805,851	11,112,295	.....
May	9,531,757	11,359,381	.....
June	9,585,904	11,493,673	.....
July	9,734,687	11,458,128	.....
August	9,058,947	11,989,115	.....
September	9,436,732	12,212,716	.....
October	9,269,806	12,047,661	.....
November	9,257,067	11,939,740	.....
December	9,464,512	12,340,297	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the s.ocks and averages reported above:

	Runs	Shipments	Stocks.
1927—			
March	2,587.20	1,878.56	16,664.94
April	2,834.23	1,512.65	17,986.54
May	2,708.40	539.29	20,215.72
June	2,946.29	664.40	22,497.61
July	3,153.39	1,276.61	24,374.39
August	3,057.89	8,713.11	18,719.17
September	3,309.56	2,656.48	19,372.25
October	2,801.32	1,226.99	20,946.58
November	2,746.50	2,220.53	21,472.55
December	2,779.86	1,893.69	22,358.72
1928—			
January	1,886.06	2,424.79	21,819.99
February	2,460.14	3,109.34	21,170.79
March	2,578.86	3,540.33	20,209.33

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stock, April 1	2,260,406.44
Runs from wells	656,684.41
Other receipts	488,152.56
Regular deliveries	465,053.28
Other deliveries	654,958.85

The amount of Illinois oil run by the Tidewater Pipe Co. in March was 68,566.41 bbls., and deliveries were 55,542.43 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
1927—		
March	727,593.94	554,947.42
April	598,226.97	444,818.49
May	728,759.40	543,192.02
June	640,975.85	532,217.78
July	613,961.30	484,902.53
August	651,276.40	529,331.37
September	619,589.49	433,212.49
October	601,099.25	408,287.58
November	605,621.14	415,185.06
December	677,321.25	397,176.07
1928—		
January	561,759.57	434,147.02
February	573,619.78	450,217.51
March	725,250.82	520,595.69

Tidewater Pipe Co., Ltd., also delivered in March, 232,980.34 bbls. of Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
October	20,936	4,355	47,968	14,129	14,387	101,774	.....	.....	.....	.....	.....	101,774
November	9,433	2,823	25,033	15,166	4,933	55,400	.....	.....	.....	.....	.....	55,400
December	10,742	3,033	26,258	24,387	7,066	76,484	.....	.....	.....	.....	2,613	79,097
January	15,287	3,032	31,032	7,453	8,710	66,513	.....	.....	.....	.....	.....	66,513
February	3,588	.....	31,980	19,734	10,230	65,532	.....	.....	.....	.....	.....	65,532

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
October	26,064	13,097	79,355	3,838	34,097	156,451	1,613	19,323	806	1,871	23,612	180,064
November	35,233	8,033	84,533	30,109	27,067	184,967	4,000	26,500	2,000	1,667	34,167	219,133
December	39,968	2,337	78,968	19,097	29,836	170,258	2,580	15 356	839	1,326	20,000	190,258
January	15,226	4,323	107 445	27 871	29 774	194 639	5,000	22 516	.....	1,355	28 871	223 710
February	6,796	5,175	108,226	29,532	28,807	178,536	7,831	22,114	6,655	2,329	39,329	217,865

GROSS PRODUCTION IN UNITED STATES FOR 12 MONTHS (REVISED)
(In Barrels)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
1927—										
March:	Month	19,835,724	22,480,921	18,179,491	3,675,143	3,853,920	2,086,108	3,684,724	3,335,800	78,131,831
	Daily average	639,863	725,191	586,435	118,553	124,320	67,294	86,604	106,100	2,485,866
April:	Month	19,493,825	22,208,130	17,755,920	3,516,930	3,878,240	2,039,550	2,671,830	3,474,000	74,538,425
	Daily average	649,794	740,271	591,864	117,231	112,608	67,985	89,061	115,800	2,484,614
May:	Month	19,506,054	23,258,463	19,489,607	3,704,314	3,493,669	1,984,651	2,682,151	3,467,000	77,585,909
	Daily average	629,228	750,273	628,697	119,494	112,699	64,021	86,521	111,839	2,502,771
June:	Month	19,181,442	22,830,330	18,360,450	3,437,580	3,365,760	1,920,180	2,634,570	3,330,000	75,060,312
	Daily average	639,381	761,011	612,015	114,586	112,192	64,006	87,819	111,000	2,621,189
July:	Month	19,319,021	26,522,546	17,580,348	3,454,082	3,406,683	2,311,019	2,678,679	3,363,300	78,635,678
	Daily average	623,194	855,566	567,108	111,422	109,893	74,549	86,409	108,494	2,536,635
August:	Month	19,279,131	26,283,350	17,682,927	3,442,240	3,242,600	2,231,202	3,489,021	3,671,000	78,221,471
	Daily average	621,907	847,850	570,417	111,040	104,600	71,974	80,291	115,194	2,523,273
September:	Month	19,054,500	24,111,660	18,322,800	3,341,340	3,032,970	2,027,070	2,268,620	3,465,000	75,623,970
	Daily average	635,483	803,722	610,760	111,378	101,099	67,569	75,621	111,774	2,521,133
October:	Month	19,448,893	24,247,053	19,200,098	3,509,169	3,117,298	2,058,889	2,258,885	3,400,000	77,240,285
	Daily average	627,384	782,163	619,358	113,199	100,558	66,416	72,867	109,677	2,491,622
November:	Month	18,516,467	23,083,380	18,628,290	3,313,650	2,906,760	1,956,960	2,234,730	3,302,500	73,942,737
	Daily average	617,216	769,446	620,943	110,455	96,892	65,232	74,491	110,083	2,464,758
December:	Month	18,938,823	23,208,417	19,840,009	3,427,174	2,962,750	1,927,148	2,400,578	3,219,900	74,924,799
	Daily average	610,930	716,400	640,000	110,554	95,576	62,166	77,428	103,868	3,416,929
1928—										
January:	Month	19,028,228	21,146,619	20,023,156	3,319,325	2,791,891	1,839,106	3,429,375	3,132,000	73,710,700
	Daily average	613,814	682,149	645,876	107,075	90,061	59,326	75,359	101,000	2,377,765
February:	Month	18,038,459	19,483,157	19,682,889	3,079,887	2,571,575	1,759,606	2,230,910	3,016,000	69,862,483
	Daily average	622,016	671,833	678,718	106,203	88,675	60,676	76,918	104,000	2,409,030
	Total 12 months	229,650,567	277,864,026	224,745,985	41,220,834	38,124,116	24,141,489	29,664,083	40,077,500	905,488,600
	Daily average	627,461	759,191	614,060	112,625	104,163	65,960	81,049	109,501	2,474,013

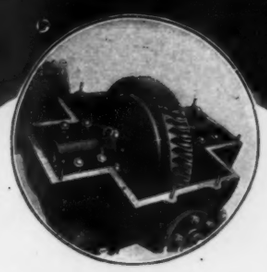
THOROUGHBRED

Thoroughbred means "bred from the best." Few winners are bred any other way.

It is much the same in pumps. Strong, efficient, durable pumps are usually the result of the "stock" from which they come—and the skill with which such stock is handled.

To be sure of good stock, we operate our own foundry. To be sure of careful handling we insist that every GASO workman go through an exacting course of training. That we are running a winning race is indicated by the frequent additions we are making to our manufacturing facilities.

GASO PUMP & BURNER MFG. CO.
TULSA - OKLAHOMA



A Winner Right From the Start

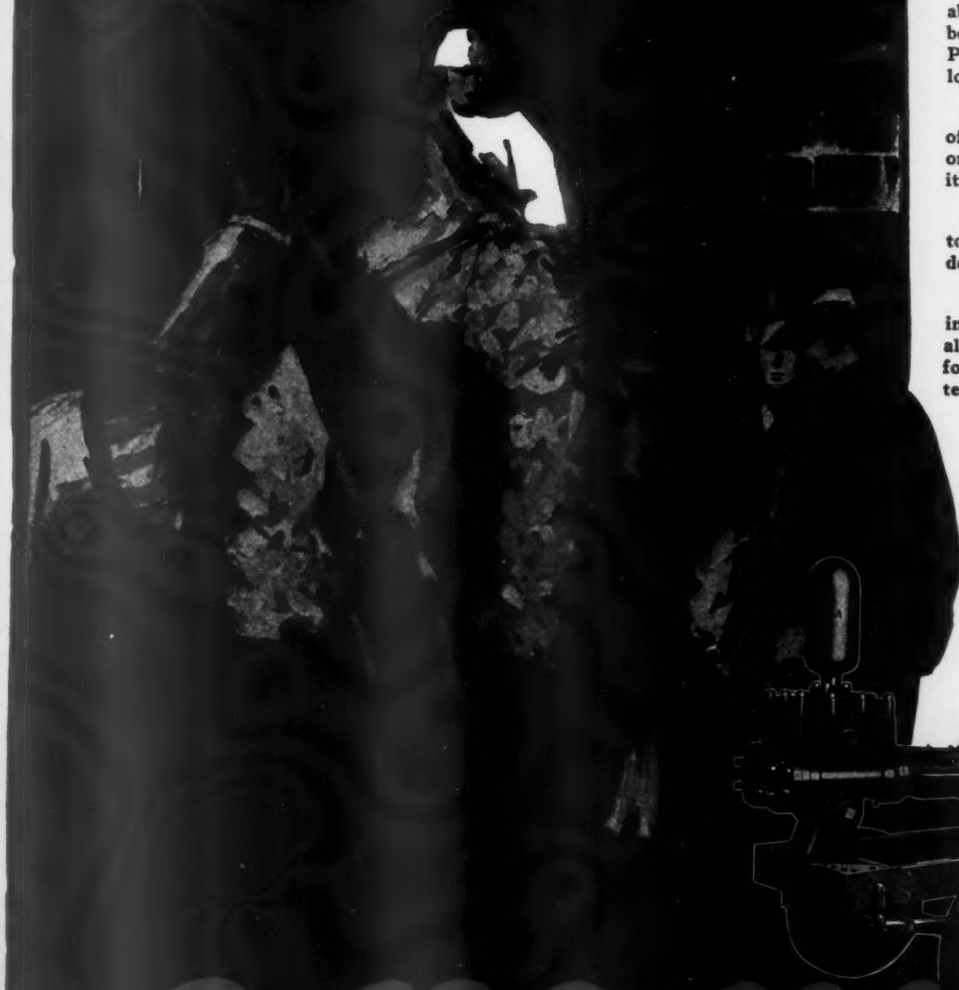
Three hours after the GASO Portable Pumping Unit made its official bow to the oil industry (at the 1925 Petroleum Exposition) a forward-looking oil company had bought it.

Six months later, as the operation of this unit became generally known, orders were taxing production facilities.

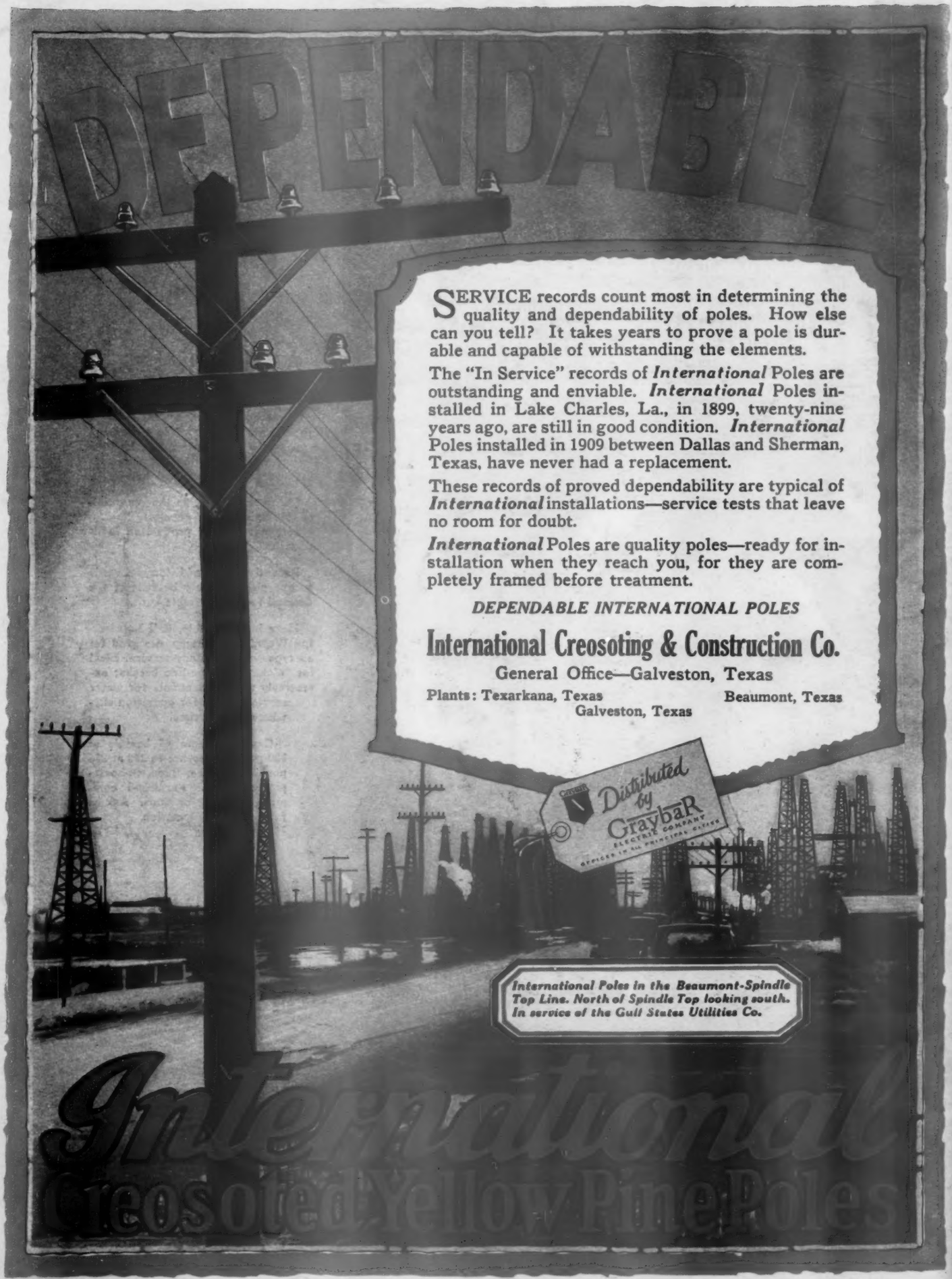
Recently a 50% addition was made to our plant—largely because of the demand for the Portable Unit.

Here is a Portable, Self-Lubricating Worm-Drive Pump, designed for all types of emergency service. Ideal for "pickup" in pipe-line breaks; extensively used in Seminole for water service; ready for operation anywhere, at any time.

Capacity, from 45 barrels at 800 pounds pressure to 250 at 275 pounds pressure. Buda, 40-horsepower motor. Furnished complete on trailer or skids. Ask us for further information.



GASO PUMPS
for every oil industry need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SERVICE records count most in determining the quality and dependability of poles. How else can you tell? It takes years to prove a pole is durable and capable of withstanding the elements.
The "In Service" records of International Poles are outstanding and enviable. International Poles installed in Lake Charles, La., in 1899, twenty-nine years ago, are still in good condition. International Poles installed in 1909 between Dallas and Sherman, Texas, have never had a replacement.
These records of proved dependability are typical of International installations—service tests that leave no room for doubt.
International Poles are quality poles—ready for installation when they reach you, for they are completely framed before treatment.
DEPENDABLE INTERNATIONAL POLES
International Creosoting & Construction Co.
General Office—Galveston, Texas
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ELECTRIC COMPANY
International Poles in the Beaumont-Spindle Top Line. North of Spindle Top looking south. In service of the Gulf States Utilities Co.
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